BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 15 1939

RECENT ADVANCES IN VACCINE THERAPY*

BY

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In an address on recent advances in vaccine therapy it is permissible for a moment to consider the history of this form of treatment. If we except Jennerian vaccination we find ourselves with Pasteur. He discovered that fowls could be protected against chicken cholera by the injection of attenuated cultures of the infecting organism. Then he turned his attention to anthrax, and after the famous experiment on sheep at Pouilly le Fort, which no one who has seen the film *Louis Pasteur* can forget, there could be no doubt that vaccines could protect animals against bacterial disease. Differences of opinion still exist as to the best way of preparing vaccines and as to the best methods of using them, but this one experiment of Louis Pasteur established for all time the principle of active immunity by means of bacterial vaccines.

Pasteur's work was carried on entirely with living vaccines and, except for rabies, was concerned only with animal diseases. Living vaccines have certain fairly obvious drawbacks in human medicine, and the next advance was the use of prophylactic vaccines made from killed cultures. This step was intimately associated with the name of our great countryman and my own master, Sir Almroth Wright, who has advanced science in many ways, not the least of which was the introduction of anti-typhoid vaccine, still universally applied. The next step, the vaccine treatment of established infections, was entirely due to Wright's initiative. It began with the treatment of local staphylococcal infections of the skin, but has now spread to many others.

When first I started working at bacteriology in Wright's laboratory at St. Mary's Hospital in 1906 vaccine therapy was in its infancy, and there were great hopes that by its means all bacterial infections could be controlled. Now, some thirty-three years afterwards, we can look back and congratulate ourselves that, although all these hopes have not been completely fulfilled, and although we are far off finality in our knowledge and practice of active immunization, in many types of infection a great measure of relief can be given to patients by the intelligent use of vaccines. At the present moment vaccine therapy is, in practice, having something of a setback in that medical practitioners have become chemically minded because of the sensational results obtained in certain infections by sulphanilamide and its allies. These drugs have an extraordinary effect on a small number of bacteria which infect the human body, and they are being used to treat all manner of bacterial infections whether or not there is any substantial evidence that there is likelihood of their being successful. However, it is certain that before long the limits of the new chemotherapy will be better understood, and I hope later to produce evidence indicating that the best results in the treatment of certain bacterial infections will be obtained by a combination of vaccine therapy with the new chemotherapy.

* An Address delivered to the Nottingham Medico-Chirurgical Society.

Method of Administration of Vaccines

The ordinary method of administration is by hypodermic injection. You are all familiar with this method, but there are certain technical details in the administration which I hope you will forgive me for mentioning. They are not "recent advances," but they are useful, and they make for the popularity of vaccine therapy.

Sterilization of the Syringe.—At the inoculation department of St. Mary's Hospital we have used hot-oil sterilization for over thirty years, and we have no intention of giving it up. An oil bath with a small gas-jet underneath stands in a corner of the laboratory, and the gas is adjusted so that the temperature of the oil is from 120° to 140° C. There need be no regulator. These oil baths can be purchased from laboratory outfitters or they can be improvised for a shilling or two from a small gas-burner, an enamelled cup, a suitable stand, and a thermometer. To sterilize the syringe the needle is removed, hot oil is drawn into the barrel and expelled two or three times; then the needle is replaced and is immersed in the oil, which is drawn through it into the syringe and again expelled. The needle and the inside of the syringe are now sterile. During the last thirty years millions of hypodermic injections of vaccines have been given to out-patients in our inoculation department without any septic complication developing.

For the busy practitioner this method is really very suitable, but it entails a capital outlay for as many syringes and needles as he would be likely to use on any one round of his practice. These are sterilized in oil as described above and are then put in their fountain-pen-like metal cases and carried with the other implements in the bag. The used ones are resterilized in oil on return to the consulting-room. One great advantage of this method is the saving in the needle bill. A hypodermic needle that is being used frequently every day will last for months; as it is kept oily it does not rust or get rough, and if one has a suitable needle sharpener (these can be obtained at a cost of about half a crown) an occasional rub will keep it sharp—much sharper than any new needle I have ever used.

It has been recommended, however, that vaccines be introduced in other ways than by hypodermic injection, and in recent years a certain prominence has been given to oral vaccination. The idea of administering vaccines by the mouth is not new, for as long ago as 1902 Almroth Wright and his colleagues in the Army experimented with typhoid vaccine given this way, and concluded that, while it was not without effect, it was too uncertain to be of practical utility. Before the great war several reports had been made, but the first large field experiment was that in 1915 by Dubarry, who maintained that considerable protection resulted from the oral administration of typhoid vaccine. Since the war oral vaccination against intestinal diseases received a great stimulus from the researches of Besredka, but his work is still very far from being generally accepted. Recently I have had the opportunity of reviewing much of the work done on oral vaccination against the enteric fevers. From this study certain conclusions emerge: (1) on the evidence at present available it is very difficult to maintain that oral vaccination can be seriously considered as an alternative to vaccination by the subcutaneous route; (2) oral vaccination may, however, be regarded as worth trying when the choice is between that and nothing.

In the past few years oral vaccines have been issued for protection against colds. We have experimented in connexion with the administration by the mouth of vaccines of the respiratory tract organism, and have found that after the ingestion of these vaccines antibodies cannot be detected in the serum of individuals who have not previously been inoculated subcutaneously.

This is not entirely unreasonable in view of Glenny's elucidation of what he has called the "primary" and "secondary" stimuli. This was worked out with toxin and antitoxin, but it is a general phenomenon which applies to all antigens and antibodies.

The first injection of a toxin, toxoid, or vaccine does not usually produce a high and lasting titre of antibodies demonstrable in the blood of the inoculated animal. This primary stimulus, although it produces very little apparent effect, in some way sensitizes the cells of the animals so that if a second injection of the same antigen is given after an interval of one or more months there is a very rapid and complete rise in the antibody content of the blood. The dose of antigen necessary to produce this secondary stimulus need not be a large one: in the case of the "anti-catarrh" vaccines the primary stimulus conferred by the injection of a vaccine so sensitized the individual that even a small amount of antigen absorbed through the alimentary tract might give the effective secondary stimulus.

Nature of the Vaccine

It is impossible to enter into the intricacies of this question, but it might be useful to deal briefly with the important practical problem of antigenic dissociation. A vaccine is a suspension or preparation of killed bacteria that is used to stimulate the production of antibodies in the animal to which it is administered. Vaccines contain the antigens of the bacteria—that is, the substances which stimulate the production of specific antibodies. These antigens are chemical substances, upon the character of which the chemists have in the last ten years thrown much light. Small changes have been made in the structure of an antigenic molecule, resulting in striking alterations in the antibody response. But these changes in the antigenic molecules of bacteria need not be made by chemists in the laboratory; they can result naturally during the growth of bacteria. Thus a bacterial culture which has been grown on an artificial medium for a long time may change its antigenic structure, and in a most important way. The "rough" or "R" degeneration was first recorded by Arkwright, who noticed that certain colonies in stock cultures of the Salmonella group of bacteria had a rough appearance, and when the change was fully advanced would not make even suspensions in salt solution as the normal culture did. These physical changes might of themselves be of no moment, but it was shown that they were accompanied by chemical changes and that some of the original antigens of the bacteria had been lost; especially was it found that vaccines made of these degenerate cultures were unable to protect animals against infections of the ordinary virulent bacteria.

In the United States for a long time all the typhoid vaccine was produced from one strain of typhoid bacillus, "Rawlings," which was isolated by Wright in 1900 and which was used to make the early typhoid vaccine for the British Army. For over thirty years, therefore, it had been grown in artificial media. In 1932 Grinnell collected cultures of this Rawlings strain of typhoid from a number of laboratories in America which produced typhoid vaccine. He found that these cultures were all more or less degenerate, and that none of the vaccines made from them would efficiently protect mice infected with a virulent culture, although a vaccine made from a recently isolated culture did so. We can assume, therefore, that for a time most of the typhoid vaccine used in the United States outside of the Services was not very effective, and these observations bring home to us the importance, when preparing stock vaccines, of using cultures in which the antigens have not degenerated.

Nowadays in the best vaccine laboratories care is taken that stock vaccines are not made from degenerate cultures. In the laboratory at St. Mary's Hospital, to which I have been attached during the whole of my working life, we have been fortunate in always having had an ample supply of fresh cultures from the hospital patients, so there was little chance of our vaccines being made from degenerate cultures; but until this "R" variation was properly appreciated many stock vaccines must have contained a large proportion of degenerate cultures.

Active Immunization with Toxoids

The production of an antitoxic immunity by the injection of toxoids is a method of treatment which will be extended as bacterial toxins become better known. A toxoid is an exotoxin that has been acted on by formalin, by which process it loses its toxic properties but retains its antigenic power. This means that it can with safety be injected into the animal body, and the animal will respond with the production of antitoxins just as if the unaltered toxin has been given. The introduction of toxoid therapy has made it possible with ease and safety to produce in man an active antitoxic immunity which can be accurately measured. The most common application in medicine of the use of toxoids is in diphtheria prophylaxis, but so much has been written about it that it is unnecessary here to do more than state that it is extremely effective.

Tetanus

Tetanus toxin has been known for many years, and tetanus antitoxin is universally used as a prophylactic measure in cases of accident. This antitoxin is prepared by injecting horses with tetanus toxoid. Ramon, in Paris, suggested that it would be of value to actively immunize

men with this toxoid, and he showed that the procedure was safe and caused no untoward reactions. He also showed that it could be combined with T.A.B. inoculations, and that in fact the yield of antitoxin was greater when it was so combined. This active antitoxic immunity to tetanus induced by tetanus toxoid is lasting, and an increased antitoxic content can be detected in the serum years afterwards, in marked contrast to the passive immunity following the administration of tetanus antitoxin, which has disappeared in a week or two.

Active immunization with tetanus toxoid has been extensively used in the Services in France, and is being employed to some extent in this country. Now all medical practitioners drive cars, and all drivers of cars are liable to serious accident. I suggest, therefore, that it might be a wise precaution to be actively immunized with one or two doses of tetanus toxoid. In this way the antitoxic content of the blood would be considerably increased, and even if tetanus antitoxin were not administered the chance of fatal tetanus would be greatly lessened. It is difficult to say whether this active immunity would, after a lapse of a year or more, be sufficient to prevent all tetanus, but there is not a doubt that the increased amount of antitoxin in the blood would neutralize a moderate dose of toxin ; it would also provide the primary stimulus, so that the body would react to the production of tetanus toxin in a wound, with a further rapid production of antitoxin.

Staphylococcus

In recent years much attention has been paid to staphylococcus toxins. It has been clearly demonstrated that a staphylococcus such as can be isolated from any boil produces a true exotoxin which can be toxoided by formalin, and these toxoids have been extensively used in the treatment of boils and other staphylococcus infections. Dolman, an old St. Mary's student, first published the result of treating such conditions with toxoid, and since then many enthusiastic articles have appeared. For the last six or seven years we have been treating in our outpatient department large numbers of localized staphylococcus infections with toxoid, and certain interesting facts have emerged. The antitoxic response to staphylococcal toxoid can readily be measured with great accuracy (with much greater accuracy than the response to any other staphylococcal antigen), and by studying the antitoxic response of different patients throughout a course of toxoid treatment useful information has been gained.

CURVE OF ANTITOXIC RESPONSE

The antitoxic content of the serum of a normal healthy man is from 1/2 to 1 unit per c.cm., and this does not differ materially from the reading obtained in most of the patients who come to us for treatment of recurrent furunculosis. This means that recurrent attacks of boils have not provided an immunizing stimulus. It has often been urged against vaccine therapy of established infections that when the patient already has so many living bacteria in his body it would be useless injecting some more dead ones in the shape of a vaccine. In these cases of recurrent boils we find that although the patient may have been suffering at intervals for years from infections of a toxigenic staphylococcus he has not made any antitoxic response. It is not that he cannot make such a response, because if a few doses of from 0.1 to 0.5 c.cm. of toxoid are administered the antitoxic content of his serum promptly rises. The extent of the rise varies with the individual, and for each individual there seems to be a limit beyond which it will not go, no matter how much toxoid is administered. This maximum figure is usually from 6 to 12 units, but it may with certain individuals be as low as 1.5 units per c.cm. (see Table I).

TABLE I.—*Variation in the Antitoxic Response to Toxoid in Different Patients*

Case	Antitoxic Content per c.cm. before Treatment	Toxoid Treatment	Antitoxic Content per c.cm. after Treatment
1	0.5 unit	0.1 c.cm. in 1 dose	1 unit
		1.5 „ „ 7 doses	1.4 units
		1.1 „ „ 3 „	1.5 „
		1.9 „ „ 4 „	1.5 „
2	2 units	1.0 „ „ 4 „	6 „
		2.6 „ „ 4 „	6 „
		2.0 „ „ 2 „	6 „
3	<1 unit	1.0 „ „ 4 „	8 „
4	3 units	0.7 „ „ 3 „	13 „
		2.5 „ „ 4 „	13 „

There is thus a great variation in the response of different patients to the same antigen, and in general it has been noticed that the clinical results obtained are better when there is a good response, although this is by no means invariable. While it is easy to measure the antitoxic power of the blood it is very difficult to measure accurately the antibacterial response. It may well be that some of these patients respond badly to any antigen, and this would explain the differences in the results obtained in different patients with any form of active immunity, be it toxoid or vaccine.

DIFFERENT FORMS OF TOXOID

Staphylococcal toxoid may, like diphtheria toxoid, be used either as the simple toxoid or as toxoid-antitoxin floccules. To obtain these latter the toxoid is mixed with an equivalent amount of antitoxic serum, a precipitate from which is separated and resuspended in saline. This precipitate contains the antigens of the toxoid and is useful where the crude toxoid gives rise to severe local reactions. The antitoxic response to the crude toxoid, to toxoid-antitoxin floccules, and to toxoid mixed with vaccine is of about the same order, as is shown in Table II, which indicates the response obtained to these antigens in different patients.

TABLE II.—*Antitoxic Response obtained with Different Forms of Toxoid*

Treatmen	Antitoxic Titre	
	Before	After
0.8 c.cm. simple toxoid in 2 doses	1	6
0.8 c.cm. vaccoid (toxoid + vaccine) in 3 doses	1	10
1.7 c.cm. toxoid-antitoxin floccules in 3 doses	1	8

PERSISTENCE OF ANTITOXIN IN THE BLOOD OF PATIENTS AFTER CESSATION OF TREATMENT

Observations were made on the blood of patients for various periods after treatment was stopped, when it was found that there was a gradual reduction in the antitoxic titre, so that after one year it had dropped to 57 per cent. of its titre at the time of the cessation of treatment. This is brought out in Table III.

TABLE III.—*Persistence of Antitoxin after Cessation of Treatment*

Interval since Toxoid administered	Number of Cases	Average Reduction in Antitoxin
2 months	9	18%
3-4 „	18	27%
6 „	13	41%
7-12 „	9	43%
14 „	1	4 units to 3
15 „	1	6 „ 3
17 „	1	6 „ 4
4 years	1	4 „ 2

MAINTENANCE OF THE ANTITOXIC TITRE BY OCCASIONAL DOSES OF TOXOID

In one or two cases it was attempted to maintain the antitoxic titre at its height by occasional doses of toxoid. A record of one such case is given in Table IV, where the maximum titre was maintained for fifteen months by a dose of 0.5 c.cm. of toxoid every three months.

TABLE IV.—*Maintenance of Antitoxic Titre by Occasional Doses of Toxoid (Antitoxic Titre before Treatment = 3 Units per c.cm.)*

Treatment	Antitoxic Titre
0.1, 0.2, 0.3 c.cm. toxoid	6 units
0.3, 0.4, 0.5, 0.5 c.cm. toxoid	6 „
Interval of 3 months	6 „
0.5 c.cm., then interval of 3 months	6 „
0.5 „ „ „	6 „
0.5 „ „ „	6 „
0.5 „ „ „	6 „
0.5 „ „ „	6 „

With the staphylococcus, however, the antitoxic power of the blood is only one part of the immunity, and we have seen a number of recurrences of boils in patients who at the time of the recurrence had a high antitoxic content in their blood. In Table V are recorded a number of patients whose boils recurred when the antitoxic power of their serum was from 5 to 6 units per c.cm.

TABLE V.—*Recurrences with High Antitoxic Power*

Recurrence after :	Antitoxic Power
2 months	6 units per c.cm.
4 „	5 „ „
4 „	5 „ „
9 „	6 „ „
10 „	5.5 „ „

We have been using staphylococcus toxoid in the treatment of local infections for the last six or seven years, and we have employed vaccines on similar cases for over thirty years. On looking up the records certain interesting facts emerge. (1) It is very difficult over a large series to say whether vaccines or toxoids were the more effective in recurrent furunculosis. (2) Some patients whose attacks of boils recurred in spite of vaccine treatment were promptly "cured" when toxoid treatment was given. (3) Some patients in whom toxoid apparently failed were rapidly "cured" with vaccine.

It is quite reasonable to find that toxoid therapy will cure some vaccine failures and that vaccine therapy will likewise cure some toxoid failures, as the two methods are complementary. Each represents an immunizing process with a different antigen of the staphylococcus, and one gives an antitoxic and the other an antibacterial immunity. It is now our custom either to administer toxoid and vaccine mixed together or to give alternate doses of the two antigens at weekly intervals. In this way it appears that the best results can be obtained.

Influenza

The question whether or not an individual can be protected against epidemic influenza by means of a vaccine is one which is of the greatest importance in medical practice. This question leads to another, What is epidemic influenza? Before the great war we were quite content to think that it was an infection by the influenza bacillus of Pfeiffer, and there is no doubt that in the 1918–19 pandemic this bacillus was present in practically 100 per cent. of cases in England and France, and that it was responsible for much of the mortality. However, more recent work, especially at the Medical Research Council laboratories, has definitely established that the primary infective agent in epidemic influenza is a virus. This virus can be passed on in ferrets and mice, and can be cultivated in the incubator in chicken embryos still in the shell. It appears likely that mild influenza, such as the first wave of 1918 or the more recent epidemics, is to all intents and purposes a pure infection of the virus and that the serious and deadly epidemic of 1918–19 was due to a combination of this virus with a bacterium, especially the influenza bacillus.

A very interesting influenza story comes from America. During and following the 1918 pandemic an epidemic of swine influenza appeared among the pigs in that country. This swine influenza is a serious and fatal disease, and has been investigated by Shope (1937) more thoroughly than was possible in any human disease. Shope discovered that swine influenza was due to a combined infection with a virus and a bacillus practically identical with the influenza bacillus of Pfeiffer. If he infected pigs with a pure virus without the bacillus a transient fever resulted and all the pigs recovered; if he infected them with the bacillus alone practically nothing happened; but if he infected pigs with both the virus and the bacillus typical swine influenza resulted and the pigs died with pneumonia. Shope found that the pigs which had been given the pure virus and had recovered from the trifling infection that resulted were completely immune to fresh infection with the virus. He also found that inoculation of the pigs with vaccines made from the influenza bacillus gave some degree of protection against swine influenza, although it was not so complete as the protection with the virus. Table VI, which is adapted from Shope, shows the protection which he obtained in pigs with heat-killed vaccines of the influenza bacillus. The animals received three doses of vaccine, and then after nine or fourteen days they were infected intranasally with a combination of virus and influenza bacillus.

TABLE VI.—*Effect of Influenza Bacillus Vaccine on Swine Influenza* (from Shope)

Pig No.	Time between Vaccination and Test (Days)	Clinical Illness	Presence of	
			Virus	Bacillus
1	9	Mild influenza	+	–
2	9	2-day fever	+	+
3	9	Not definitely ill "Filtrate disease"*	+	–
4	*Control* (no vaccine)	*Typical swine influenza*	+	+
5	14	Mild influenza	+	+
6	14	4-day fever. Mildly ill	+	+
7	14	„ „	+	+
8	14	„ „	+	+
9	14	„ „	+	–
10, 11	*Controls* (no vaccine)	*Typical swine influenza*	+	+

* "Filtrate disease" is the name given by Shope to the disease resulting from a pure virus infection.

Here it will be seen that all the animals receiving the vaccine of the influenza bacillus suffered from a much milder disease than the controls, which had not been protected. This observation is of the greatest interest in view of the attempts made to prevent influenza in man with bacterial vaccines, especially those of the influenza bacillus. After the 1918 pandemic many papers appeared stating that such vaccines had conferred a degree of protection against influenza, but none of the figures given have satisfied statisticians. In view, however, of Shope's experimental results with pigs it appears that these claims were justified and that protection can be obtained by such bacterial vaccines.

Attempts are at present being made to protect man against influenza by means of a vaccine of the influenza virus. The results on experimental animals have been successful, but the opportunity has not yet arisen for the final proof that it can protect man during an epidemic. It seems likely that in the near future it will be possible to obtain a virus vaccine which will give, either alone or in combination with the older bacterial vaccine, complete protection against epidemic influenza in the majority of the inoculated individuals.

Prevention of the Common Cold

This problem has much in common with that of influenza. Attempts have been made to prove that all "colds" are due to virus infections, but even the best workers have not succeeded in demonstrating a virus in the majority of colds in any series. A "cold" is the clinical reaction to any acute irritation of the upper respiratory tract, and bacteriological investigations make it certain that many colds are purely bacterial in origin and are probably often exacerbations of a chronic infection. Even if in some cases the primary infective agent is a virus, much of the discomfort experienced by the patient is due to superadded bacterial infection. What has been said about influenza probably applies equally to colds. No virus vaccine is at present available, but in susceptible people, who often apply to their medical practitioners for protection against recurrent colds, much good can be done by bacterial vaccines such as have been in use for many years.

Synergic Action of Vaccine Therapy and Chemotherapy

The latest development in connexion with vaccine therapy is its association with the new chemotherapy—that is, treatment by means of sulphanilamide, M & B 693, and similar chemicals. I have shown that the action of M & B 693 on pneumococci in human blood is bacteriostatic and not bactericidal. This means that the chemical interferes only with the growth of the infecting bacteria; the natural defensive mechanism has to complete their destruction. It follows that the more powerful these defences are the more rapid and complete will be the killing of the bacteria. In other words, the higher the degree of immunity of the patient the better will be the apparent result of treatment by M & B 693. It is thus incumbent on the physician to use any possible means of increasing the immunity as well as to give a drug like M & B 693.

I have shown *in vitro* that the addition of antipneumococcal serum to a mixture of blood and M & B 693 greatly enhances the antibacterial power of the mixture. Several workers have shown that an antiserum used in conjunction with sulphanilamide saves animals which would have died if treated with antiserum or sulphanilamide alone: probably the most striking communication on this subject is that by Loewenthal (1939).

Nothing has yet appeared in connexion with the combination of vaccine therapy with these new chemicals, except the suggestion by Cokkinis and McElligott (1938) that in gonococcal infections better results are obtained if the treatment is delayed for a time to allow an increased immunity to develop as a result of the infection, or if immunity is artificially induced by a vaccine. Recently Maclean, Rogers, and I (1939) have made experiments which show that vaccine therapy can with advantage be combined in pneumococcal infections with treatment with M & B 693. Mice were inoculated with a single dose of vaccine containing 25,000,000 pneumococci. After six days these, together with uninoculated mice, were infected with a virulent culture of the same pneumococcus. Some of these mice were treated with M & B 693 and some were not. The results obtained are shown graphically in the accompanying table. It seems quite clear from these that a single dose of vaccine saved the animals, which would inevitably have died if treated with M & B 693 alone.

Table showing Synergic Action of Pneumococcus Vaccine and M & B 693

Infecting Dose of Pneumococci	Number of Mice	Treatment
1 m.l.d.	● ● ● ●	Control mice untreated
100 m.l.d.	● ● ● ●	25 million vaccine; no M & B 693
100 m.l.d.	● ● ● ●	No vaccine; 5 daily doses of 25 mg. M & B 693
100 m.l.d.	○ ○ ○ ○ ○	25 million vaccine and 5 daily doses of 25 mg. M & B 693
1,000 m.l.d.	● ○ ○ ○ ○	

● = Mouse died. ○ = Mouse survived.

A confirmatory experiment was done with rabbits, except that these were infected with the virulent pneumococcus intradermally instead of intraperitoneally, as in the case of the mice. Here again the vaccinated rabbit not treated with M & B 693 died; the uninoculated rabbit treated with M & B 693 lived, but had a very serious illness for four days, when pneumococci could be recovered from the blood; the vaccinated rabbit treated with M & B 693 had only a trifling illness, and pneumococci were never recovered from the blood stream. The temperature charts of the two rabbits (vaccinated and unvaccinated) treated with M & B 693 are of interest.

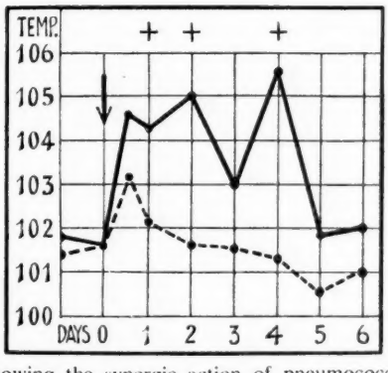

Chart showing the synergic action of pneumococcal vaccine and M & B 693. The continuous line = unvaccinated rabbit; the broken line = vaccinated rabbit: both were treated with M & B 693. The arrow indicates the time of infection with pneumococci. Blood cultures: vaccinated, always negative; unvaccinated, + (indicated above).

It would be well to consider the application of these results to the treatment of pneumonia in man. This is a serious disease, and from the communications which have already appeared there is no doubt that M & B 693

has a profound influence on the infection. There is no doubt also that the simple administration of this drug does not save all the patients, and it is necessary, therefore, to consider whether we can supplement its beneficial action. It has been shown that a specific antiserum acts synergically with sulphanilamide in streptococcal infections, and that *in vitro* pneumococcal serum acts in the same way with M & B 693. No reports have yet been made regarding the united action of pneumococcal serum and M & B 693, but there is little doubt that this will be a good combination. However, pneumococcal serum is not available in all types, it is expensive, and it is not always easy to administer in general practice.

It would seem that there is more hope in vaccine therapy. Vaccines are available for every type of pneumococci, or a polyvalent vaccine can be used which contains all of them. Vaccines are cheap and are easy to administer. It has been shown by many workers that even large doses of pneumococcus vaccine can be given in cases of pneumonia without risk of a negative phase, and Wynn has for many years been using stock vaccines as a routine treatment of pneumonia. Barach (1931) has shown that three days after the administration of pneumococcal vaccine to patients suffering from pneumonia specific antibodies can be demonstrated in their serum. Maclean, Rogers, and Fleming (1939) have demonstrated that mice which had received a single dose of pneumococcal vaccine and did not show a high degree of immunity recovered when treated with M & B 693, whereas the unvaccinated mice infected with the same dose of pneumococci and receiving the same treatment with M & B 693 all died.

These observations, taken together, make a good case for the use of pneumococcal vaccines in pneumonia in man in conjunction with M & B 693. If possible the pneumococcus should be typed and a vaccine of the specific type administered, but if typing is not possible then a stock polyvalent vaccine can be administered at once; and of course the sooner the vaccine is given the better the result is likely to be.

Failures and Successes in Vaccine Therapy

One sometimes hears that in a particular case or condition vaccine therapy has been tried and has failed. It is well to remember that there is vaccine therapy *and* vaccine therapy, and this may be illustrated by the following cases.

The first case was that of an American doctor practising as a specialist in diseases of the chest in one of the Western States. He had worked in our laboratories at St. Mary's for long periods before and during the war, and when he returned home he contracted severe influenza during the 1918–19 epidemic. After recovery he suffered from typical spasmodic asthma. He tried the ordinary remedies and climatic treatment; then he had his tonsils removed in New York, and there he was treated with a vaccine made from bacteria isolated from his sputum—all without benefit. Here, then, was a case in which vaccine therapy had been tried and failed. Fortunately he thought he would come to London to see whether his old colleagues at St. Mary's could help him. Immediately on arrival at Waterloo Station he had a severe asthmatic attack, so it could not be said that the London climate suited him. Examination of his sputum showed organisms, but nothing that seemed likely to account for his condition. The faeces were then examined, and an almost pure culture of a haemolytic enterococcus was found. He was treated with a vaccine of this organism in doses beginning with one-third of a million and increasing eventually to 1,000 millions. Apart from an attack soon after treatment was started he had no more asthma, and he is still free some seventeen years afterwards.

When he was convinced that he was recovering he sent the news to a fellow practitioner in the Western States who suffered from asthma with a similar history. She travelled some 6,000 miles to have a vaccine made from the haemolytic enterococci in her stool, for she also had a great preponderance of this organism. On the boat on the way over she found another asthmatic with a similar history. He, too, had an intestine full of enterococci, and a vaccine was successful in his case also.

These three cases happening together, all due to an enterococcal infection of the gut—a condition that is usually neglected—could not but make a lasting impression; but the moral of the tale is that in a particular case vaccine therapy was tried and had failed, and yet when it was tried again in another way it was eminently successful. This case could, I am sure, be paralleled by hundreds of others.

In conclusion I must thank my colleagues, and especially Drs. Maclean and Young, for permission to make use of work in which they took a considerable part.

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DERMATITIS FROM SULPHONAMIDE COMPOUNDS

BY

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The extensive use of the sulphonamide group of drugs has resulted in a certain incidence of toxicity. The various manifestations of this toxicity have been reported in the literature from time to time, but comparatively little attention has so far been drawn to the skin eruptions that may be encountered during the administration of the drugs. These eruptions often raise problems of differential diagnosis, and their variations in type and degree and in their response to treatment are not without interest. A brief review is here attempted of some thirty-six cases of sulphonamide dermatitis seen chiefly at Guy's Hospital during a fairly extensive administration of these drugs in the venereal diseases and dermatological departments over the last three years. The cases are surveyed from a clinical aspect, and certain information which is now considered necessary has frequently not been recorded, as it was only during prolonged observation that various characteristics of the eruptions became more clearly appreciated. Nevertheless, it has been felt that the information available may be of some value in correlating the toxicity of the drugs.

Newman and Sharlit (1937) reported four cases of light sensitization following sulphonamide administration; the eruptions occurred on the exposed areas, between the second and fifth days; they were macular in type, with raised papules and oedema. The eruptions faded during five to six days of protection from light, and could be reproduced on giving further sulphonamide without exposure to light. These cases also exhibited patch sensitivity. Menville and Archinard (1937) reported similar cases occurring after large doses of prontosil—one case escaping eruption after exposure to sunlight on the ninth

day of administration but succumbing after exposure on the tenth day. Hallam (1939) has reported a case which illustrates the danger of ultra-violet light to patients taking sulphonamide. Rimington and Hemmings (1938) have shown that an increased output of porphyrin occurs during sulphanilamide therapy together with coproporphyrin I, which is a photosensitizer; they consider that in every patient this process varies in degree according to individual factors, and this variation may account for the relative infrequency of the light-sensitization type of eruption. Wien (1938) found that in animals 2-sulphanilylaminopyridine (M & B 693) does not show the same tendency to increased porphyrinuria.

Salvin (1937) reported a generalized urticarial manifestation with no allergic family history in a patient who gave a positive patch reaction. Schonberg (1937) records an urticarial eruption which progressed after discontinuance of the drug and then developed into a generalized purpuric rash. A single tablet one month later produced an irritating scarlatiniform eruption. Frank (1937) reports a similar relapse from one dose given six days after improvement from a generalized morbilliform sulphonamide eruption. Goodman and Levy (1937) describe purpuric spots with generalized maculo-papular eruptions in patients who relapsed immediately on later administration, but who gave negative patch reactions. Finney (1937) mentions a case of morbilliform eruption with albuminuria which slowly cleared on stopping the drug. Exfoliative dermatitis after 86 grammes of sulphonamide with severe general toxic symptoms was reported by Myers and others (1937). Davis (1939) reports a morbilliform eruption on the fourteenth day which did not clear on ceasing to administer the drug. This case developed later a superadded scarlatiniform rash, but since there was also severe stomatitis the later eruption may possibly have been a toxic manifestation of the stomatitis, especially as he reports that the rashes cleared immediately the stomatitis improved. This case may therefore further illustrate the tendency of one eruption to predispose to the occurrence of another. Palmer and Hanbury (1939) report an eruption bearing a similarity to the irregular flat-topped papules of lichen planus.

Details of Cases

The majority of the cases have shown a generalized eruption of the morbilliform type, but rashes of urticarial, scarlatiniform, and light-sensitization type have been observed on several occasions. In almost every case the skin manifestation has appeared between the eighth and fourteenth days and most frequently between the eighth and tenth days. The occurrence of the rash apparently depends more on this time factor than on the dose of the drug administered. The possibility of a sulphonamide preparation producing an eruption seems to be present, whatever compound is used, if the administration is continued for more than eight days, as is so often necessary; but its frequency would appear to depend to some extent on the therapeutic efficiency of the particular preparation used. In this series, however, the light-sensitization type of eruption has only been observed primarily with sulphanilamide.

Although generally it has been necessary to discontinue the administration of the sulphonamide when the rash has appeared, it has been possible in some cases to continue the drug and to observe a rapid clearing of the eruption. With certain cases a further course of sulphonamide has been instituted at a later date with the same or different compound of the group. Here again the variations in response have been surprising, for some cases show an immediate sensitivity to the substance, others develop a rash after another latent period, while a further group complete this later course without skin manifestations.

Details of the individual cases are given in the table. The morbilliform type of rash has usually begun as generalized irritation, followed in a few hours by faint bluish macules on the upper arms or trunk, increasing in intensity and spreading to cover the front and back of the trunk, while the limbs show a profuse eruption on the extensor and on the more proximal regions. These macules often become slightly raised, and the rash may progress to become a maculo-papular eruption, in some cases with fine scaling, and frequently exhibiting a degree of urticarial response. The glands are not usually involved, and the mucous membranes usually escape, although there may be coryza and lacrimation, while vesiculation has been reported. Frequently there is considerable malaise, with a pyrexia of 3° or 4° and a slight increase in the pulse rate. Scarlatiniform and erythematous eruptions are generally extensive, irritation is the rule, but circumoral pallor is not seen; in the absence of a primary throat infection there is no congestion of the fauces.

The simple urticarial eruptions have shown patches of erythema with severe irritation, the appearance of wheals, and areas of considerable oedema. The eruption in the three cases showing light sensitization was limited to the face, neck, forearms, and hands, extending just beyond the exposed areas, and there was considerable oedema, with macules coalescing to form intense erythema with vesiculation.

Differential Diagnosis

Several of these patients have withheld from their private doctors information that they were taking tablets, with the result that they have occasionally, and not surprisingly, been diagnosed as cases of German measles, measles, scarlet fever, enema rash, etc., and have sometimes been sent to fever hospitals as such. Cleveland (1939) reports a case where variola was for a time suspected.

A correct diagnosis depends primarily on the recognition that sulphonamide compounds may produce skin manifestations of varying forms and that the compounds are now administered for conditions which may lead the patient to conceal that he has been taking them. The exclusion of the exanthemata may then give some difficulty, although the frequency of irritation and the infrequency of any of the signs which commonly accompany the specific fevers may be helpful. A skin eruption between the eighth and fourteenth days of known sulphonamide administration is highly suggestive of a sulphonamide dermatosis. Intradermal sensitization tests are not reliable: they probably depend on the cause of the particular eruption, and even in truly sensitized cases the skin may already be reacting to its maximum capacity. Urine testing may be of more help, but the amount of sulphonamide excreted varies considerably: some of the eruptions appear to be associated with a retention of the drug, while in others elimination in the urine is normal. Werner (1939) described a simple test, using 3 per cent. *p*-dimethylamino-benzaldehyde in 10 per cent. hydrochloric acid. One part of this solution added to nine parts of diluted urine gives a yellow flavine-like colour or a turbid yellow precipitation, according to the concentration of the drug, in the presence of sulphonamide. Lloyd and Lloyd (1930) drew attention to the diazo test first reported by Abelin (1911), but using resorcinol as the second component. This test,

Analysis of 36 Cases of Dermatitis from Sulphonamide Compounds

Case No.	Type of Rash	Irritation	Drug	Total Dose (Gm.)	Days	Drug Continued	Rash Faded (Days)	Further Sulphonamide					Remarks
								Interval	Drug	Total Dose (Gm.)	Days	Rash	
A5025	Morbilliform	+	M & B 693 (Dagenan)	30	10	No	1	—	—	—	—	—	
A4465	Macular	+	,,	31	13	No	2	—	—	—	—	—	
A4656	Rubella	—	,,	20	10	No	1	—	—	—	—	—	
A4711	Measles	?	,,	18	8	No	Rapid	—	—	—	—	—	
A4727	Morbilliform	+	,,	22	8	No	2	—	—	—	—	—	
F5173	Scarlet Fever	+	,,	16	8	No	Rapid	—	—	—	—	—	
F7322	Urticarial	+	Prosepta-sine	21	10	No	2	—	—	—	—	—	
F7618	Scarlatiniform	—	Sulphanilamide	35	11	No	1	—	—	—	—	—	
F7514	Papulo-erythem.	+	,,	25	9	No	2	—	—	—	—	—	
A3639	Erythematous	—	,,	39	13	No	2	—	—	—	—	—	
A4479	Papular	+	M & B 693	24	8	No	2	—	—	—	—	—	
F7850	Erythema	?	,,	27	10	No	3	—	—	—	—	—	
A5203	Maculopapular	—	,,	26	8	No	?	—	—	—	—	—	
A5345	Rubella	—	,,	27	9	No	4	—	—	—	—	—	
A4260	Urticarial	+	Sulphanilamide	42	14	No	Rapid	7 days	M & B 693	7½	5	No	
F7498	Papulo-erythem.	?	,,	41	12	No	2	7 weeks	Prosepta-sine	42	20	No	
F7845	Papular	—	M & B 693	21	9	No	3	3 days	M & B 693	14	15	No	
C693	Macular	+	,,	20	10	No	Rapid	4 ,,	,,	30	15	No	
B12	,,	+	,,	24	8	No	5	7 ,,	,,	21	21	No	
A5378	,,	+	,,	19	9	No	4	12 ,,	Sulphanilamide	15	6	Irritation	
A5128	Maculopapular	+	,,	24	8	No	7	5 ,,	,,	4	2	Mottling	Skin test negative
A4692	Scarlet Fever	+	,,	34	14	No	3	25 ,,	M & B 693	½	1	Erythema	With gross irritation
F7429	Erythema	?	Sulphanilamide	18	12	No	2	6 weeks	Sulphanilamide	1	1	Urticaria	
A4026	Measles	?	,,	39	13	No	Rapid	16 days	M & B 693	1	1	Scarlatiniform	10 weeks later macular eruption on 8th day of further course
A4179	Erythema of Face	+	,,	30	10	Yes	1	0	Sulphanilamide	19	10	No	
F8228	Macular	+	M & B 693	26	9	Yes	2	0	M & B 693	9	5	No	
F6198	Morbilliform	?	,,	23	8	Yes	1	0	,,	2	1	No	
F7973	,,	+	,,	27	9	Yes	1	0	,,	6	2	No	
F7855	Urticarial	+	,,	20	10	Yes	4	0	,,	8	4	No	
A3665	Scarlatiniform	?	Sulphanilamide	30	10	No	3	3 days	Sulphanilamide	41	15	Papulo-erythem.	Drug continued, rapid fading
A4876	Nil	—	M & B 693	24	10	—	—	12 ,,	M & B 693	3	2	Scarlatiniform	Drug continued; rash faded in one day. Further 24 gm. without rash
A3612	Nil	—	Sulphanilamide	60	20	—	—	8 ,,	Sulphanilamide	39	13	Urticar. Erythema	Progressed for two days after tablets
A4734	Raynaud	—	M & B 693	6	2	Yes	1	0	M & B 693	15	5	No	Works in cold store. No previous attacks
A4209	Light-sensitive	+	Sulphanilamide	30	10	No	Rapid	20 days	M & B 693	48	16	No	
A4234	,,	+	,,	30	10	No	3	5 weeks	,,	24	8	Light-sensitive	Drug stopped. Rash faded in 4 days; van den Bergh, weak positive, indirect
A4188	,,	+	,,	33	11	No	Rapid	—	—	—	—	—	

after diazotization of the sulphonamide compound in the urine, will give a port-wine colour with several of the more commonly used sulphonamide preparations. It is nevertheless important to remember that a sulphonamide rash may be due to retention of the drug in the body, so that the urine may fail to give a positive reaction (see below).

Discussion

The varying skin manifestations and the differences of their later history during sulphonamide administration do not seem to agree with any single theory of causation, and this view has already been advanced by Tedder (1939). The appearance of a rash only after eight to fourteen days of treatment bears a similarity to the erythema of the ninth day noted so frequently with the arsenobenzene compounds. It is also reminiscent of such an allergic phenomenon as the serum rash seen after approximately the same interval from serum administration, with the one difference that I have not heard of any case occurring after only one or two doses of a sulphonamide. In fact, to produce a rash the sulphonamide must be given up to the time of its appearance or at any rate the day preceding; even then this evidence of intolerance to the compound is observed in only approximately 10 per cent. of cases. Once a patient has shown a rash he may remain sensitive to the drug for months, and one tablet (0.5 gramme) taken after a long interval may produce a further eruption in a few hours, even when there is no previous history of any allergic manifestations in the patient or his family. Again, other cases take a further prolonged course of the drug without any incident.

The fact that it is sometimes possible to demonstrate a normal elimination of the substance in the urine while the rash is present suggests that there may be cases of true sensitization to the drug, while in those showing a retention of the drug the rash may be a toxic result of failure to eliminate the compound that is continually being ingested. In this respect it is interesting to observe that examples of drug fever, appearing after a similar time interval but without any skin rash, have been not infrequently observed. When the elimination is at fault it has been found necessary to discontinue the drug in order to clear the skin. Some patients with evidence of sulphonamide in the urine have continued medication under observation, with the result that the skin has cleared more rapidly than in the other group, and in none of these cases has further eruptions been observed if the drug has been again administered at a later date. The patient may in this way have been desensitized to the drug. In reporting earlier cases (Erskine, 1938) I put forward a further theory for which there appears to be some support on the grounds of clinical response to therapy. It is conceivable that the drug, acting on some buried focus of infection in the body, liberates toxins from that focus, and that these toxins are the cause of the eruptions sometimes seen. Certainly some cases bear a striking resemblance to scarlet fever, even including pre-eruptive shivering, malaise, and nausea, and the skin manifestations of scarlet fever are at any rate believed to be due to a toxin. The increased eruption occasionally seen in psoriasis during sulphonamide treatment and the response of certain cases of lupus erythematosus (Barber, 1938) might be considered to support this view.

Epstein (1939) has drawn attention to the need for distinguishing true light sensitization from an eruption of that nature seen during sulphonamide therapy for which he has suggested the term of "photo-allergy"; but Rimington and Hemmings have shown that sulphanilamide does produce an increased porphyrin excretion, evidence which suggests true photo-sensitization in these cases. It is well known that during sulphonamide administration an excess of urobilin can often be demonstrated in the urine, and one of my cases gave an indirect positive van den Bergh reaction.

In conclusion it is justifiable to remark that although these eruptions are encountered not uncommonly during treatment of a case with sulphonamide compounds they are not serious contraindications to chemotherapy. With careful observation the eruptions are easily controlled, and diagnosis need not be difficult when the possibility of this evidence of sulphonamide intolerance is recognized. Artificial sunlight and unnecessary exposure to sunshine should, however, be forbidden a patient during the period of treatment, while he might be saved unnecessary embarrassment, especially if ambulatory, if the urine were tested frequently by these simple methods. Fewer patients might then be permitted to experience this (to them) startling complication. Finally, although certain compounds appear in the table to have an increased liability to the production of the rash, it is solely because we have found them, for our purposes, more effective therapeutically.

Treatment

The majority of eruptions will rapidly clear with appropriate treatment or cessation of administration. When the elimination of sulphonamide in the urine is found to be depressed the drug should be discontinued. Large quantities of fluid and alkaline diuretics will help rapid elimination. When there is no evidence of diminished excretion the drug may be continued under careful observation in the same or diminished dosage so long as no serious exacerbation of the rash occurs. This usually leads to a more rapid clearing of the skin in these cases, and appears possibly to desensitize the patient.

Ephedrine may help to control severe irritation, especially when a pronounced urticarial element is present in any type of rash. Local application is of secondary importance in any but the most intense eruption, but a calamine lotion has been found the most helpful.

Summary

A brief review of the literature of dermatitis from sulphonamide compounds is given and theories of its causation are advanced.

Morbilliform, scarlatiniform, urticarial, and light-sensitization types of eruption occurring during the administration of sulphonamide compounds are reported.

The cases have been divided into two groups depending on urinary elimination, and appropriate lines of treatment are suggested.

I wish to thank Dr. H. W. Barber and Mr. V. E. Lloyd for their helpful criticism and for permission to report details of cases in their care.

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Copies have been received from the British Pharmacopoeia Commission of two reports by its Committee on Pharmaceutical Chemistry. These are chiefly concerned with corrections of assays and of tests of purity. In addition new monographs have been prepared for the assay of several important drugs, including halibut-liver oil, cyclopropane, mandelic acid, and sulphanilamide. The Commission is issuing these reports in order that the recommendations made therein may be available for discussion before they are adopted for the next edition of the *British Pharmacopoeia*. Such discussion will largely be confined to analytical chemists, since most of the recommendations relate to details of technique. The reports provide evidence of the quantity and quality of the voluntary work carried out by the committee. The importance of this work is very great, because the reputation of the *British Pharmacopoeia* as a presumptive legal standard depends upon the accuracy of the chemical methods which it recommends. The reports (numbered respectively 11 and 12) are published from the office of the General Medical Council, 44, Hallam Street, London, W., price 1s. 6d. each.

A GASTROSCOPIC STUDY OF RADIOLOGICALLY NEGATIVE DYSPEPSIA*

BY

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In 1937, when reviewing the diagnoses made in digestive disorders in my last 10,000 out-patients (Bulmer, 1938), I was concerned to find the unsatisfactory state of what might be called the "gastro-duodenal" group: those cases which had symptoms suggesting disturbed functions of stomach or duodenum. In about one-third of these patients the diagnosis I had made was tentative and the significance of the symptoms was unexplained, even after a careful consideration of the history, physical state, *x*-ray examination of stomach and duodenum, and occasionally a fractional test meal or cholecystogram. The figures are given in Table I, and they need little comment. Chronic gastritis was diagnosed without gastroscopy; therefore its presence remains conjectural. That so large a group was called "dyspepsia of uncertain origin" has been a matter for later self-congratulation, as gastroscopy showed that the usual diagnosis of "gastric neurosis" would have been inaccurate in more than half.

TABLE I.—*The Diagnoses in 1,575 "Gastro-duodenal" Cases*

Group A, Definite: 966 (61%)	
Gastric and duodenal ulcer	859
Gastric cancer	89
Acute gastritis	18
Group B, Indefinite: 589 (38%)	
Dyspepsia of uncertain origin	288
Chronic gastritis	111
Aerophagy	103
Upper abdominal colic	33
Gastroptosis	24
Gastric neurosis	20
Vomiting of uncertain origin	10
Group C, Rare: 20 (1%).	

In January, 1938, the Department of Surgery of the University of Birmingham placed an 85-degree Wolf-Schindler flexible gastroscope at my disposal, and I determined to make a systematic study of such cases as would fall into Group B in Table I. The majority of the patients were drawn from my out-patient department, and I attempted to get a consecutive series, although this was not always possible. Latterly the work has been much facilitated by the use of a 50-degree Wolf-Schindler gastroscope which has been bought by the hospital; the greater magnification obtained with this instrument has enabled a more adequate inspection of the gastric mucous membrane to be made.

Table II gives an analysis of my personal series, and in extenuation of the failures the inclusion of Table III may be permissible.

TABLE II.—*An Analysis of the 250 Patients Gastroscoped to April 20, 1939*

Radiologically negative or inconclusive dyspepsia	147
Duodenal ulcer	14
Gastric ulcer	38
Gastric cancer	7
Miscellaneous—anaemia, dermatitis, gall-bladder disease, post-operative gastric conditions, neurosis, etc.	29
Failure to make an adequate examination (excluding 9 in radiologically negative dyspepsia group)	15

* Based on a paper read on May 27, 1939, at a meeting of the Association of Physicians in Birmingham.

TABLE III.—*The Reasons for Failure to make an Adequate Examination in 24 Patients*

Gastroscope passed into stomach (16)	
Poor view in stomach	7
Stomach indistensible	3
Pyloric stenosis	2
Patient coughed	2
Pain produced in epigastrium	1
Light failed	1
Gastroscope not passed into stomach (8)	
Patient non-cooperative	5
Spasm of oesophagus	2
Pain produced in throat	1

Radiologically Negative or Inconclusive Dyspepsia

Cases in this group must be familiar to everyone. Some seek advice because of symptoms so definite that diagnosis of peptic ulcer is made but remains unconfirmed by the radiologist; others have symptoms of a much less definite character—discomfort in the upper abdomen related to meals, nausea, vomiting, perhaps disturbances of appetite; others again may be under treatment for unexplained haematemesis or melaena; in yet another large group a physical explanation of the varied symptoms seems doubtful, yet there is sufficient justification for a radiological examination. As has been already admitted, my own efforts in the diagnosis of a group comprising one-third of my hospital gastro-duodenal series have been unsatisfactory. During the past fifteen months opportunities have presented themselves for the gastroscopic study of 147 patients with radiologically indefinite dyspepsia. The results have been most interesting from the diagnostic standpoint, as in more than half the cases organic disease of the stomach has been found which could have been detected in no other way.

Table IV summarizes the gastroscopic results in the patients personally examined, and some explanation is necessary. In sixty-six patients no abnormality was found, and this has been expressed in so many words in order to leave open the possibility of some abnormality being present; an increasing experience of gastroscopy has made me increasingly reluctant, as in other spheres, to accept a negative finding as significant. The contractions of the pylorus still arouse wonder, but it is tinged with apprehension when the lesser curvature of the antrum refuses to unfold itself: in one of my apparently normal cases an unseen ulcer perforated there. Other blind areas exist, and an ulcer known to be present may not be seen by the gastroscopist. I have been most careful in the diagnosis of chronic gastritis, and I have demanded a gross departure from the normal before so diagnosing a case. I am satisfied that there would be no dispute about the presence of gastritis in the series, although there might be differing opinions as to its type.

TABLE IV.—*The Gastroscopic Findings in 147 Cases of Radiologically Negative or Inconclusive Dyspepsia*

No abnormality found (in one case an ulcer later perforated)	66
Chronic gastritis	60
Failure to make an adequate examination	9
Gastric ulcer	8
Simple ulcer later shown to be an ulcer-cancer	1
Curious abnormality later shown to be an ulcer	1
Cancer suspected (not found at operation)	1
Inoperable cancer	1

The series has been further subdivided into two groups according to whether the *x*-ray findings were negative or inconclusive.

RADIOLOGICALLY NEGATIVE DYSPEPSIA

Whilst convenient, this term is not strictly correct, as in most of the patients it implies that an *x*-ray examination of the stomach and duodenum gave a negative result; in view of the frequently atypical manifestations of gall-bladder disease I doubt whether the term is applicable until a cholecystogram has also proved negative. The results are rather striking: almost half the patients were found to have abnormal stomachs, the abnormality being such that there was every reason to think that it gave the explanation of their symptoms. Gastritis was the condition most commonly found, and the discovery of gastric ulcers in six patients is a proportion confirmed by other gastroscopists. Gastroscopy in no way detracts from the value of radiology, and it is unlikely that a gastric ulcer will escape detection if both methods are used, although one instance of this has occurred.

TABLE V.—*The Gastroscopic Findings in 117 Cases of Radiologically Negative Dyspepsia*

No abnormality found (in one case ulcer later perforated)	59
Chronic gastritis	45
Gastric ulcer	6
Curious abnormality later shown to be an ulcer	1
Failure to make an adequate examination	6

RADIOLOGICALLY INCONCLUSIVE DYSPEPSIA

This is a considerably smaller group, and Table VI needs little amplification. Two-thirds of the patients had a gastroscopic abnormality; one case of ulcer-cancer was thought, both by myself and by the surgeon, to be innocent, and its true nature was not recognized until a microscopical examination was made. Gastroscopy has no value in the diagnosis of duodenal ulcer, and the "doubtful duodenal ulcer" cases are included to show the gastric abnormalities which were found in them; a duodenal ulcer may have also been present.

TABLE VI.—*The Gastroscopic Findings in 30 Cases of Radiologically Inconclusive Dyspepsia*

X-ray Findings		Gastroscopic Findings	
Early cancer	7	Gastritis	4
		Ulcer	1
		Inoperable cancer	1
		Ulcer—later shown to be cancer	1
? Duodenal ulcer	9	Gastritis	5
		Normal	2
		Ulcer	1
		Failed	1
Rapid emptying ? leather bottle	1	Normal	1
Normal stomach (one-third retention in 4 hours)	1	Normal	1
Suggests gastritis	5	Failed	2
		Cancer (not confirmed)	1
		Gastritis	2
Spasm in front of pylorus	6	Normal	2
		Gastritis	4
Very shallow posterior wall depression, suggesting surface ulceration	1	Gastritis	1

The Types of Gastritis Encountered

Table VII shows the types of gastritis found. Schindler's classification (Schindler, 1937; Schindler and Ortmayer, 1936) is used, but as I experienced difficulty in some of the cases an indeterminate group has been introduced. The atrophic type is simple to diagnose in its developed form, while the other types are easy to recognize as being examples of gastritis, but difficult to fit into a classification. I have been specially impressed by the rarity of Schindler's hypertrophic form, and here I would emphasize that this name is applied by other gastroscopists to a variety which in no way resembles Schindler's account or his illustrations of it. This is a source of some confusion in reading the literature, and it would make for clarity if each writer would explain his classification.

TABLE VII.—*The Types of Gastritis found in 46 Patients (Schindler's Classification)*

Atrophic gastritis	3
Chronic hypertrophic gastritis	8
Chronic superficial gastritis	30
Indeterminate types, not atrophic	5

Some Clinical Considerations

Perhaps the important outcome of this study has been the recognition of chronic gastritis as a common cause of obsure dyspepsia; but the way has been tedious, an expensive instrument is necessary, and a good deal of time has to be spent upon an examination which requires experience in both interpretation and technique. It is difficult to foresee any short cut to the diagnosis of chronic gastritis, as the history, gastric chemistry, and radiological examination are all inconclusive, and an inspection of the gastric mucous membrane is essential. While, for example, the causes of chronic hoarseness are well known, no method save laryngoscopy would be considered in diagnosis; even more so is this the case with a relatively superficial lesion like gastritis. Radiology will in the great majority of cases exclude the ulcerative lesions of ulcer and cancer, but even when this has been done diagnosis must remain conjectural unless a gastroscopy is carried out.

The difficulties of making a non-gastroscopic diagnosis of chronic gastritis are well illustrated by the following notes of two patients whose symptoms had something in common.

Case 1.—A married woman aged 40 was referred to me by Dr. Mildred Russell of Walsall. She had a long history of dyspepsia, worse during the last two years, and complained of distension after meals, of a poor appetite, and of loss of weight perhaps due to her very restricted diet. Examination revealed only an anaemia shown to be microcytic, and radiographs of the stomach and gall-bladder were negative. Gastroscopy showed a severe gastritis corresponding to Schindler's chronic hypertrophic type.

Case 2.—A single woman aged 52 was referred to me by Dr. Willett of Kidderminster on account of dyspepsia which had been present for many years. Her chief symptom was of constant nausea associated with acid eructations, but the appetite was good and pain was present only during an occasional attack of diarrhoea. Examination was negative, radiographs of the stomach and gall-bladder were quite inconclusive, and a fractional test meal showed a low free acidity. I felt fairly confident that chronic gastritis accounted for the symptoms, but gastroscopy failed to reveal any abnormality of the gastric mucous membrane.

Two patients with severe dyspepsia came under observation after the crisis of September, 1938, and they again demonstrate very clearly the pitfalls in the way of a clinical diagnosis of gastritis.

Case 3.—A man aged 50 was referred to me by Dr. Bence of Birmingham with a view to gastroscopy. He had always been highly strung and had had two nervous breakdowns. During the crisis he was chief air warden for his district, and he began to get nervous and anxious owing to the difficulties of the position. He developed hunger pain and, later, lost his appetite and began to lose a little weight. Physical examination was negative, but a radiograph showed hyper-

trophy of the folds of the upper third of the stomach with an irregularity on the lesser curvature—the radiologist suggested a gastritis with perhaps a small ulcer. While the psychological aspects of the case were obvious on talking to the patient, the symptoms and inconclusive *x*-ray report raised questions of grave import. Gastroscopy showed a severe superficial gastritis with numerous gastritic ulcers, but the changes were chiefly in the distal parts of the stomach, and there was no hypertrophy of the folds, so that the *x*-ray report suggesting gastritis did not correspond either in position or character to what was seen in the mucous membrane.

Case 4.—A man aged 48 was seen in consultation with Dr. P. W. Tait of Sutton Coldfield on October 4, 1938. He had had a digestive upset in 1937, which began with complete loss of appetite, vomiting after food, and a sense of dull irritation in the epigastrium. The condition cleared up in two weeks, but a radiograph showed a normal gall-bladder, with a duodenal deformity suggesting an ulcer. He had a similar attack, immediately after the crisis, during which I saw him. I had difficulty in accepting his symptoms as being due to a duodenal ulcer, and with Case 3 fresh in my mind I made a diagnosis of gastritis. I was asked to see him again in March, 1939, as he had had three or four slighter attacks of the same type as before, during one of which he had melaena. He was investigated thoroughly in view of these events; a fractional test meal showed a very high free acidity, and a radiograph revealed a marked duodenal deformity, but gastroscopy failed to show any abnormality in the stomach; there were no signs of gastritis. At the operation by Mr. H. H. Sampson a very chronic and adherent duodenal ulcer was found and dealt with appropriately.

Cases 3 and 4 illustrate both the psychogenic basis of some dyspepsias and the fallacies in the way of making a clinical or radiological diagnosis of gastritis. Case 3 is especially interesting and recalls the work of Cullinan (1938) and Wittkower (1938) on the psychogenic factor in ulcerative colitis. It is unfortunately outside the scope of this paper to pursue the clinical aspects further, but the few illustrative cases may vivify the monotonous series of tables.

Summary and Conclusions

In 1,575 "gastro-duodenal" cases, culled from nearly 10,000 new out-patients, an indefinite diagnosis was made in 38 per cent.

Using the Wolf-Schindler gastroscope, 147 patients with radiologically negative or inconclusive dyspepsia have been studied; the series is almost consecutive.

The gastroscope has proved to be of great value in the routine investigation of this type of dyspepsia, and in about one-half of the patients an organic lesion of the stomach has been seen: usually a chronic gastritis of the superficial or hypertrophic types, atrophic gastritis being much less common.

Chronic gastritis can only be diagnosed with certainty by gastroscopy, and four case histories are given to emphasize the difficulties of clinical diagnosis.

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The Association of Port Health Authorities of the British Isles has published a pamphlet on the prevention of infestation of ships by the bed-bug. The illustrations in this are reproduced from the Ministry of Health *Memorandum on the Bed-Bug and How to Deal with It.* Requests for copies should be addressed to the honorary secretary of the Association, City Hall, Cardiff.

PROBLEMS OF CHANCE IN MEDICINE AND RESEARCH*

BY

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In 1936 Mainland published an interesting paper in which attention was drawn to the frequency with which problems of chance in clinical medicine were ignored or falsely estimated. He formulated a method by which the odds could be calculated, even in small series, for or against a certain eventuality. Our reasons for doubting the validity of this method are given under the heading of "Statistical Appendix," where they are open to the criticism of statisticians. It is our intention in this paper to present a more exact method of estimating significance in a form easily accessible to those who are not conversant with statistical methods.

Significance

The term "significance" is widely and loosely used by many writers; to statisticians, however, it means something very definite—namely, "What are the odds against this result being due solely to the workings of chance?" As a first illustration, let us take two series of 100 patients in an epidemic of, say, influenza. It is assumed that these series are equivalent in every known respect and that they are observed during the same period of the epidemic and are subjected to precisely the same treatment. The mortality in one series is 15; what mortality may we expect in the other? If 15 die in the other series the agreement is closer than one can reasonably expect; with mortalities of 13, 14, 16, or 17 no surprise would be felt. But what if 35 die in the second series? There would be little hesitation in looking for an unknown factor—a "cause" for this difference in mortalities. Now somewhere between 17 and 35 in the present example there must be drawn a borderline separating differences which would arise so frequently in sampling that we may ascribe them to chance, and differences which would occur so seldom that some other cause must be sought.

The type of problem we are considering, then, is one where we want to know the answer to the following question: "What are the odds against 20 or more, 21 or more, 22 or more, etc., deaths in the second series?"

When these odds become great—for example, 199 to 1—we assume that chance has had very little to do with the matter, and some other factor must be responsible for the difference. An arbitrary line must therefore be drawn somewhere, and odds in excess of this arbitrary value counted as "significant." This is precisely what is done in statistical tables: the term "$P = 0.05$" simply means that the probability (P) of such an eventuality happening through the workings of chance is 5 in 100, or, in betting parlance, "19 to 1 against." This is the borderline arbitrarily made between chance differences and significant differences.

In the table which we give two limits of significance are used—0.05 and 0.005. These are equivalent to odds of 19 to 1 and 199 to 1 respectively. The smaller figure in each cell, which represents the lower odds, is the

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minimum number necessary to make the two series significantly different, and differences equalling or exceeding the higher figure may be regarded as highly significant. Examples will be given later to make this quite clear. The main use of the table, which has been calculated

Table of Differences required at Levels P = 0.05 and P = 0.005

No. in Each Series	Smallest Eventuality																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	20	25	35	50	75
4	4																					
5	4 5	4																				
6	4 6	4																				
7	4 6	5 6																				
8	4 6	5 6	5																			
9	4 6	5 7	5																			
10	4 7	5 7	5 7	5																		
11	4 7	5 7	5 8	5 8	5																	
12	4 7	5 7	5 8	5 8	5																	
13	4 7	5 8	5 8	6 8	6																	
14	4 7	5 8	6 8	6 8	6																	
15	4 7	5 8	6 8	6 8	6																	
18	5 7	5 8	6 9	6 9	6 9	6																
20	5 7	6 8	6 9	6 9	6 9	7 9	7															
30	5 7	6 9	6 10	7 10	7 11	7 11	7 11	7 11	8 11	8 11	8 11	8										
50	5 8	6 9	6 10	7 11	7 11	7 12	8 12	8 13	8 13	9 13	9 14	9 14	9 14	9 14	9 14	9 14	9 14	9				
100	5 8	6 9	7 11	7 11	8 12	8 13	8 13	9 14	9 14	9 15	10 15	10 16	10 16	10 16	11 17	11 17	11 17	12 18	12 19	13 20		
200	5 8	6 10	7 11	7 12	8 12	8 13	9 13	9 14	9 15	10 15	10 16	10 16	11 17	11 17	11 18	11 18	12 19	13 20	15 21	15 23	16 25	18 27
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	20	25	35	50	75

Smallest Eventuality

Example of the use of the above table :

Series .. .. I II
Number 10 10
(that is, " 10 " in left-hand column)

Deaths 2 5
Recoveries 8 5

Look up smallest eventuality (2) in top line. Corresponding cell opposite series 10 gives " 5 " as minimum difference necessary for significance. The actual difference between deaths was only 3.

by the exact factorial method (Fisher, 1934), is for small series. Where there are several hundred cases in each series the old methods, based on the standard error or Pearson and Elderton's χ^2 test, are satisfactory ; but where series are unavoidably small they become unreliable. It may be impossible to ignore results from these small series and wait for larger numbers, for the rareness of a disease or the prohibitive cost of experimental animals may preclude this solution. The table is therefore presented in the hope that it will be of use to workers whose series are small and who are unable to make their calculations according to the somewhat laborious factorial method.

Use of the Table

As it stands the table assumes that there is an equal number of cases in the two series to be compared. The numbers in the left-hand column refer to the number of cases in each series. Along the top of the table is given the smallest eventuality in both series. Two figures are included in each cell in the body of the table: the smaller gives the difference which is required to make the odds 19 to 1—that is, P = 0.05 ; the larger gives the difference required for higher significance—that is, odds of 199 to 1, P = 0.005.

Example I.—Two groups of 10 guinea-pigs are inoculated with a suspension of streptococci ; 2 in the treated group and 8 in the untreated group die. The difference is therefore 6. Look down the left-hand column for 10 (number in each series) and along the top for 2 (smallest eventuality). The figures in the appropriate cell are 5 and 7. The observed difference of 6 is therefore well within the 0.05 limit, and hence is significant, but cannot be regarded as *highly* significant.

Example II.—In two similar groups of 10 the deaths are 4 and 8. The difference is 4. It will be noticed that there is no entry opposite 10 to correspond with 4 (smallest eventuality) in the top line. This difficulty is easily overcome, for 8 and 4 deaths out of 10 respectively mean 2 and 6 recoveries. The smallest eventuality is therefore 2, and on referring to the appropriate cell it will be seen that a difference of 5 deaths would have been necessary for significance. In the example quoted the difference was only 4.

Example III.—The first illustration gave a mortality of 15 in a series of 100 patients. What mortality would be required to make the second series differ significantly? It is assumed that the mortality in the second series is higher, so that 15 is still the smallest eventuality. 100 in the left-hand column and 15 in the top row give figures of 11 and 17. To be highly significant there must be 17 more deaths in the second series—that is, 32. A difference of 11 or more, however, would still have been enough for most practical purposes.

Series containing Unequal Numbers

Obviously it is not always possible to have two series of precisely the same number for comparison, and tables to cover all possible combinations would be unwieldy. In many cases it is still possible to use the accompanying table in order to obtain an approximate idea of the significance of the difference observed in unequal series. From our own experience we should say that results obtained by the modifications given below are sufficiently near accuracy to enable, say, readers of medical journals rapidly to assess the value of numerical data presented to them.

1. Reduce the larger series to make its total equal that of the smaller, and reduce the deaths, etc., proportionately. On consulting the table, if the difference is now statistically significant, it must have been still more significant in the original data before reduction.

2. If the difference, after reduction of the larger series, is not quite significant the following may be tried: *providing that one series is not more than twice as large as the other* the arithmetic mean between the two series is found, and the figures respectively raised and reduced in proportion. The table may then be consulted.

Example :

Number in series 20 10
Deaths 4 7

The arithmetic mean between 20 and 10 is obviously 15 ; 4 reduced proportionately = 3. 7 raised proportionately

becomes 10.5. The difference is thus greater than 7, which from the table (15 in series; smallest eventuality 3) is ample for significance.

3. If one series is more than twice as large as the other the harmonic mean gives a better approximation.

Some Examples from Recent Literature

We propose here to cite four examples of actual figures published in medical journals, partly to provide further exercises for readers who will require to use the table in their own work and partly as an illustration of the inadvisability of drawing conclusions from data without subjecting such data to statistical analysis.

(A) Schutze (1939) gave the following figures (Table III in his paper):

Mice inoculated with Plague

Treatment	Number	Survivors
M & B 693	6	2
Sulphone	6	4
Controls	6	0

On referring to the table (series = 6; smallest eventuality = 0) we find a difference of 4 necessary to establish statistical significance. In this case we may infer that sulphone has had an effect, but we may *not* conclude that M & B 693 had any effect.

(B) Anderson and Dowdeswell (1939):

Treatment of Pneumonia

Treatment	No. of Cases	Deaths
M & B 693	50	1
Controls	50	8

The difference is thus 7 in series of 50, with a smallest eventuality of 1. The table shows that a difference of even 6 would have been significant at P = 0.05.

(C) H. Loewenthal (1939) (Table I in the paper under reference):

Infected Mice treated with Immune and Normal Sera in Addition to Sulphanilamide

Treatment	No. of Series	Deaths
Immune serum	4	0
Normal serum	4	3

The table shows that the minimum required difference for series of 4 is 4—that is, all must die in one group and all must recover in the other. Thus the experiment, though suggestive, cannot justify the author's statement: "There can be no doubt that . . . the combination of drug and (immune) serum is obviously superior."

(D) Cramer and Horning (1939) (Table I in authors' paper):

Adrenalectomy in Mice.—Sex Incidence of Mortality with and without Oestrinization

	Sex	No. in Series	Deaths
Adrenalectomy alone	M	8	4
	F	16	7
Adrenalectomy + oestrinization	M	19	4
	F	13	2
Combined	M	27	8
	F	29	9

The authors state: "There is a difference between the two sexes in so far as the females showed a better survival than the males in both groups." The table, of course, shows that there is no significant difference in these death rates. It can be demonstrated that the odds are 9 to 1 *in favour* of the differences in the combined series being exceeded by chance alone!

Summary

In small experimental and clinical series the assessment of the significance of observed differences is often a matter of difficulty.

We present a table by means of which the clinician and research worker can easily decide whether his results are significant or not.

The table, which is based on the factorial method, is so constructed as to permit quick reference and the accurate acceptance or rejection of data.

Statistical Appendix

The calculation of odds in problems similar to the ones we have dealt with above can be attempted in different ways. Historically the earliest approach was through the binomial distribution and the use of the well-known $\sqrt{npq}$ formula. This, however, fails when applied to small samples; an extension of its use has been suggested by Mainland (1936), where a confidence interval is calculated on the basis of a known probability p. In the type of experiment we are dealing with the probability has to be estimated from the data themselves, and Mainland's method would in our opinion require adjustment.

This brings us to the next method of approach—the χ^2 test. The test, originally proposed by Pearson, the logical use of which was first defined by Fisher, has been successively amended (*a*) by Yates's correction for continuity and (*b*) by the substitution (Fisher and Yates, 1938) for χ^2 of varying values of χ; their table, however, does not include some of the lowest frequencies which are often met with in clinical problems.

There are two factorial methods: Greenwood (1913) published tables of "the percentage frequency of successes in a second sample m after drawing p successes in a first sample n." This at first sight seems identical with the type of problem before us, and the results obtained from his tables agree fairly closely with ours, as calculated by the exact factorial method given by Fisher (1934). We prefer the latter method.

In our table, columns 0 to 20 have been calculated by the exact factorial method; the others were deduced from the $\sqrt{npq}$ formula, and in some cases have also been checked by the factorial method. In addition, random entries have been checked by the Fisher and Yates χ_6 method, and agreement has invariably been obtained.

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The College of Physicians of Philadelphia has awarded the Alvarenga prize to Dr. Harry Goldblatt, professor of experimental pathology and associate director of the Institute of Pathology, School of Medicine, Western Reserve University, Cleveland, Ohio, for his outstanding contributions to the pathogenesis of hypertension. This prize was established by the will of Pedro Francisco daCosta Alvarenga of Lisbon, Portugal, an associate fellow of the College of Physicians, to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883, to the author of the best memorial upon any branch of medicine which may be deemed worthy of the prize.

MANAGEMENT OF THE FRANK-BREECH PRESENTATION

BY

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The frank breech, or breech presentation with extended legs, is well known as a cause of stillbirth and neonatal death. In order to reduce this danger to the infant many methods of delivery have been tried, such as induction of premature labour, routine bringing down of a leg, routine forceps on the aftercoming head, and even Caesarean section; but all these procedures involve interference, and danger to the mother by increasing the liability to infection. Obviously such a drastic treatment as Caesarean section can hold only a very limited place in the treatment of this condition, as the operation itself carries a mortality risk that is four times greater than the maternal mortality rate as a whole.

In the series of 100 cases now under review the child mortality rate has been considerably reduced by using simple methods with no risk to the mother. In the first place, all unnecessary interference has been eliminated; and, secondly (remembering how the new and inexperienced house-surgeon in a maternity hospital usually has one or more stillbirths before becoming proficient at breech deliveries), a special effort has been made to provide a skilled and sufficient staff of attendants for each breech delivery. This has been easy to arrange in this particular series of cases, as the institution (a municipal maternity home) is served by permanent full-time medical officers. The home consists of thirty-five beds (ten antenatal), and is a training school (for Certificate A) and also a postgraduate school for midwives, thus having an adequate staff of trained midwives.

From June, 1931, until April, 1938, 113 infants were delivered as "breech with extended legs." In thirteen of these cases twins or infants weighing less than 5 lb. were delivered, and for this reason have been omitted from the series. All thirteen were born alive, and suffered no ill effects from their mode of delivery. The results of delivery in the remaining 100 cases are shown in the accompanying table, which indicates the parity of the mother, weight of the child, and cases in which there were other complications.

The management of the delivery is kept as simple as possible; there is no interference except fundal and suprapubic pressure, unless definite indications arise. Induction of labour is performed only for post-maturity or small pelvis, as the mature head stands the compression of delivery better than the premature one. A leg is pulled down only when there is definite delay during the second stage, as the complete breech is a better dilator than the half-breech. In no case in this series was it found necessary to bring down a leg during the first stage of labour. Traction is not used, as this extends the arms and head. Hot towels are not employed, as they obstruct progress and make handling of the infant difficult: in no case has the child suffered from this omission. Forceps are used only when there is difficulty with the aftercoming head. They are, however, always boiled and ready for use in emergency. Episiotomy has been performed in most of the later cases of the series, especially in primiparae, as it reduces pressure on the infant's head and also eliminates risk of a third-degree tear. It is done while the breech is distending the vulva.

Table showing Particulars of Series of 100 Cases, with Complications and Results

	No. of Cases	Stillbirths	Neonatal Deaths
Parity:			
Primiparae	68	3	5
Multiparae	32	1	0
Weight of Child:			
5–6 lb.	15	0	0
6–7 lb.	35	0	1
7–8 lb.	40	3	3
8–9 lb.	7	0	1
9–10 lb.	3	1	0
Other Complications Present:			
Toxaemia of pregnancy (moderate degree)	14 (1 A.P.H.)	0	1
*Small pelvis	22 (4 cases induced)	0	0
Pyelitis	2	0	0
Lateral placenta praevia	2 (leg pulled down in 1 case)	0	1
Post-maturity	4 (all induced)	1	0

* Twenty cases with a diagonal conjugate of less than 4¾ inches are included under this heading (in no case was it less than 4¼ inches), and the remaining two cases had slight contraction of the outlet.

Mode of Delivery

Delivery is allowed to proceed naturally until the child's body is born as far as its costal margin (fundal pressure being used only if progress is unduly slow). From this stage onwards no time is lost until the child's mouth is free, as the head begins to enter the pelvis and may press upon the cord. A loop of cord is *not* pulled down to feel for pulsation, as this not only wastes valuable time but may also pull the cord out of a safe hollow in the pelvis. The uterine contraction is at once aided by fundal pressure until the head leaves the uterus and enters the pelvic cavity; then the patient is rapidly anaesthetized with chloroform, so as to enable the head to be pushed firmly but slowly through the pelvis by suprapubic pressure. (Fundal pressure is of little use at this stage, and efficient suprapubic pressure is difficult with the patient conscious. Uterine contractions and bearing down are no longer of any use, as the head has left the uterus.) As soon as the head is low enough its delivery is aided by the Mauriceau-Smellie-Veit (or shoulder-traction and jaw-flexion) method. Once the mouth is free and the child can breathe the delivery through the outlet can be as slow as one pleases.

The following is the personnel present at each delivery. A medical officer delivers the child and conducts the labour generally. Two senior midwives assist in the delivery—one to perform fundal and suprapubic pressure, the other to give the chloroform. In emergency one skilled midwife can perform both these duties.

Results obtained by these Methods

Risks to Mother.—(*a*) *Tears* (if no episiotomy is done): Primiparae run a 60 per cent. risk of a second-degree tear and 4.5 per cent. risk of a third-degree tear, while multiparae run a 40 per cent. risk of a second-degree tear. (*b*) *Pyrexia:* No case of notifiable pyrexia occurred in the series.

Risks to the Child.—Risk of stillbirth, 4 per cent.; risk of neonatal death, 5 per cent.

Particulars of Stillbirths in this Series

Case 12. Primipara. Baby 7 lb.—The child died during the first stage of labour, and at birth was found to have been strangled by the cord being tightly wound round its neck.

Case 29. Primipara. Baby 7 lb.—This was a case of badly managed labour. The second stage lasted six hours, and the child died one hour before delivery. Obviously a leg should have been brought down earlier in the second stage when advance became slow.

Case 61. Multipara. Baby 9 lb. 1 oz.—Delay occurred owing to difficulty in delivery of the shoulders, and death was due to asphyxia. There was no intracranial injury.

Case 76. Primipara. Baby 7 lb.—As Case 61.

Particulars of Neonatal Deaths

Case 30. Primipara. Baby 8 lb. 9 oz. Complicated by Toxaemia of Pregnancy.—The child was born with white asphyxia, and never recovered. There was marked delay during delivery, due to dorsal displacement of an arm. There was no intracranial injury.

Case 32. Primipara. Baby 7 lb. 7 oz.—Death was due to foetal abnormality—hydrocephalus.

Case 70. Primipara. Baby 6 lb.—Death was due to foetal abnormality—spina bifida.

Case 77. Primipara. Baby 7 lb. 12 oz. Complicated by Toxaemia of Pregnancy.—The child died of haemorrhagic disease on the third day in spite of treatment with blood.

Case 85. Primipara. Baby 7 lb. 8 oz.—The child was born in a state of white asphyxia due to separation of a lateral placenta praevia, and never recovered. There was no intracranial injury.

Of these nine fatalities only four were actually due to the mode of delivery (Cases 29, 30, 61, and 76).

Comparison of the Mortality Rate with that of the Maternity Home for all Cases.—During 1938 (when the percentage of primiparae was practically the same as in this series—that is, 68 per cent.), the stillbirth plus foetal mortality rate was 6.5 per cent. The corresponding percentage for this series is 9.

Observations on the Series

1. Induction of labour does not seem to be necessary unless there is some special indication—for instance, post-maturity, small pelvis, or such complication as toxaemia of pregnancy. In this group of cases, ten (10 per cent.) were induced for the following reasons: post-maturity (four), toxaemia of pregnancy (two), small pelvis and toxaemia (three), and small pelvis (one).

2. A leg need not be pulled down as a routine method, as delay due to splinting by the legs occurred in only four cases (Cases 29, 76, 78, and 86).

3. Extension of the arms is not a common complication in the absence of traction. It occurred in three cases only.

4. Routine delivery of the head by forceps is unnecessary. They were needed in only two cases.

5. Hot towels are unnecessary.

6. Episiotomy is advisable, especially in primiparae.

Conclusion

A relatively low infant mortality rate can be obtained if the frank breech is delivered, with a minimum of interference, by a skilled team of attendants, preferably in an institution. Thus every effort should be made to diagnose this complication (especially in patients booked with midwives) so as to ensure delivery in suitable institutions with skilled personnel instead of being left to one midwife in difficult surroundings with inadequate help.

Clinical Memoranda

Rupture of the Thoracic Aorta

Rupture of the thoracic aorta is an uncommon cause of death. The following case is of interest in that death did not occur instantaneously, and, secondly, because it presented a problem in differential diagnosis.

CASE HISTORY

The patient was a man aged 63 who gave a history of having had no medical attention for years but had not felt well for two years. He suffered from occipital and, occasionally, frontal headache; dyspepsia and progressive weakness, associated with a certain amount of dyspnoea. These symptoms, however, did not warrant him seeking medical advice.

On March 21, 1939, while stooping forward to do some repairs, he became suddenly ill. He experienced a slight pain at the lower end of the sternum and in his back, at approximately the same level. A feeling of faintness then came over him and he sat down. His legs then felt numb and he decided to enter his home, and this he just managed to do before he fell to the ground. To his surprise his legs refused to function. This information he gave lucidly. He was seen at this stage, and examination disclosed that both legs were paralysed from the waist down.

The leg reflexes were absent. Sensation to pain, touch, and temperature was, however, present. The abdominal reflexes were absent. There was no loss of sphincter control. The pupils were normal and reacted to accommodation and light. No other nervous lesion was found. His blood pressure was systolic 150, diastolic 100. Auscultation over the apex revealed an accentuated first sound. No murmur was heard.

It was decided to remove him upstairs. This was done with the patient assisting by holding on to the stairs. When in bed he felt comfortable with very little pain. He was now left prior to his removal to hospital. An urgent message within twenty minutes prevented this.

The patient was dying when seen for the second time. He was unconscious. His face was grey. Breathing was imperceptible. There was no pulse at the wrist. Over the praecordia the auricles could be heard beating quickly with an occasional ventricular systole. The vesicular murmur was inaudible. Within three to four minutes the patient was dead.

POST-MORTEM FINDINGS

At the necropsy the following facts were found. In the right pleural space free blood was present. The left pleural cavity contained adhesions in its lower half.

The lungs showed changes indicative of chronic bronchitis. There was hypertrophy of the heart, especially the left ventricle. The musculature was pale and soft. The valvular orifices were normal. Extending on either side of the aorta from the fourth to the sixth thoracic vertebrae was a mass of clotted blood, and when this vessel was opened it was seen that a tear was present at the lower border of the fifth thoracic. This tear had the appearance of being incised as with a knife. It extended transversely and in an upward direction for about an inch. The aorta itself was the seat of advanced atheromatous changes, but the area surrounding the tear was entirely free from any degenerative change.

In the spine adjacent to the lesion nothing pathological was found. The gall-bladder walls were diseased and a stone was present. The liver was somewhat enlarged and fatty. Both kidneys were cystic with the capsules adherent. The transverse colon was distended to a fair degree. Examination of the brain, which was minutely investigated, showed nothing.

Bristol. D. A. MACKINNON, M.B., Ch.B.

Acute Monocytic Leukaemia

Monocytic leukaemia is a condition rare enough to warrant the recording of a case.

CASE REPORT

A youth aged 16 noticed slightly enlarged glands in the neck about the middle of October, 1938. On November 3 he had a painful and loose upper incisor extracted, followed a few days later by two more teeth. Within a day, as he put it, "all the glands came up," and he developed a temperature. He was admitted to hospital on November 11 with a temperature of 99° F. and greatly enlarged glands of the neck and axillae. The blood picture on November 10 was: red cells, 5,000,000 per c.mm. (average size, 7.02 μ); haemoglobin, 95 per cent.; white cells, 18,000 per c.mm.—polymorphs 14 per cent., large and small lymphocytes 85 per cent., monocytes 1 per cent. This picture supported the diagnosis made—namely, glandular fever. Apart from the above facts nothing abnormal was detected clinically; the spleen was not palpable and the Wassermann reaction was negative.

For a week there was a mild irregular pyrexia, then the submental glands showed fluctuation, and on incision what appeared to be pus was evacuated (November 20). His general condition was well maintained, and the wound healed until a week later, when he developed a looseness of the stools, passing a greenish semisolid stool five or six times a day. Coincidently his condition deteriorated and the pyrexia became more pronounced. No abnormal organisms were cultured from the stools. A blood count on December 6 showed: red cells, 3,500,000 per c.mm. (size, 7.5 μ); haemoglobin, 75 per cent.; white cells, 107,000 per c.mm. The pathologist (Dr. Mole) reported that the films were those of an acute leukaemia, apparently monocytic in type, with many monoblasts. A peroxidase reaction, however, showed the cells to be almost entirely of the granular series.

The patient went steadily downhill, the temperature fluctuating more violently (between 98° and 103° F. in twenty-four hours on two occasions). The only evidence of oral sepsis which he ever exhibited appeared now in the form of a grey necrotic patch under the tongue. A count on December 14 showed the white cells to number 188,000 per c.mm. At this stage the axillary glands had almost disappeared, although the cervical glands were as enlarged as ever. The spleen was not palpable. Three days later he complained of sudden severe generalized abdominal pain, vomited, and appeared very shocked. The abdomen was generally tender and rigid. Within a few hours the pain eased, the abdomen remaining tender and becoming hourly more distended. He died that night. Unfortunately permission for a necropsy was not obtained.

Films, taken December 14, were examined by the late Dr. W. Howel Evans, who reported: "As far as can be judged from films the total number of white cells is higher than is usually found in monocytic leukaemia, but a very strong point in favour is that the polymorphs form only approximately 3 per cent. Granular myelocytes are 1 per cent. and lymphocytes 15 per cent., and 80 per cent. of the total are of the monocytic type, of all grades of maturity from monoblasts (approximately one-third of the total monocytic cells) to mature monocytes. They exhibit the usual characteristics—large size, vacuolation, and pseudopodia at the periphery of the cell."

The case shows two unusual features. (1) The total white count was generally higher than is usual in this form of leukaemia: a figure under 100,000 per c.mm. is more commonly found. (2) Although it was impossible to confirm the fact at necropsy, the clinical picture at the end pointed very definitely to an intestinal perforation. Such a termination to an acute leukaemia is not common.

I am indebted to Drs. F. Lyburn and L. Cunningham for permission to report this case and to the late Dr. W. Howel Evans for permission to quote his opinion on the films.

G. WYNNE-GRIFFITH, M.B., Ch.B.,
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Reviews

PROGRESS IN OBSTETRICS AND GYNAECOLOGY

Recent Advances in Obstetrics and Gynaecology. By Aleck W. Bourne, M.B., B.Ch., F.R.C.S., F.R.C.O.G., and Leslie H. Williams, M.D., M.S., F.R.C.S., F.R.C.O.G. Fourth edition. (Pp. 366; 98 figures. 15s.) London: J. and A. Churchill. 1939.

Great progress has been made in obstetrical and gynaecological knowledge since the last edition of this book was published seven years ago, and a critical record of this has been most admirably presented in the new edition. The chapter on uterine carcinoma contains data collected from many different clinics and discusses with absolute fairness the arguments for and against each line of treatment that has found favour in the past or at present. Other chapters of special interest deal with progress made in obstetrical and gynaecological endocrinology, radiology, and physiotherapy. Recent work on puerperal sepsis is clearly described. The various modifications of Caesarean section technique, even including the Latzko, are recorded, with a judicial summary of the indications for each method and a timely warning on the danger of "exalting technique at the expense of sound judgment." Contradictory statements such as those concerning the dangers of lipiodol (pp. 182 and 302) and those dealing with the oestrogenic hormone content of ovarian tumours (pp. 250 and 297) should not be present in a book such as this. Post-natal examination is advised to discover puerperal retroversions, but no advice is given as to how they should be managed. It is disappointing to find seven pages devoted to the interposition operation, and it is an interesting comment on surgical conservatism to find the Manchester operation, which was devised by Donald in 1888, described in detail in *Recent Advances*, 1939.

The new edition is certain to be widely read and greatly appreciated both by those practising obstetrics and gynaecology and by those reading for examinations in this branch of medicine.

SURGERY OF THE HAND

Chirurgie de la Main. Livre du Praticien. Plaies, Infections et Traumatismes Fermés de la Main. By Marc Iselin. (Pp. 320; 135 figures. 65 fr.) Paris: Masson et Cie. 1938.

Surgical Treatment of Hand and Forearm Infections. By A. C. J. Brickel, A.B., M.D. (Pp. 300; 166 figures; 35 plates, 10 of which are coloured. 31s. 6d. net.) London: Henry Kimpton. 1939.

Injuries and infections of the hand have an importance which is rarely recognized in surgical literature but which is well known to those who are interested in workmen's compensation. On the French railways they account for over 46 per cent. of sums paid in compensation, while in Zurich the highest accident mortality occurred in a period of ten years in wounds of the fingers. At the International Congress on Industrial Accidents held at Brussels in 1935 statistics were given regarding more than 40,000 accidents, and of these wounds of the hands represented 8 per cent. and those of the fingers 33 per cent. Wounds of the hands and fingers thus represented 41 per cent. of all industrial accidents, and they cost the insurance companies 30 per cent. of their total expenditure and represented a total cost of no less than seventy million crowns. It is therefore obvious that the field covered by these two volumes is of enormous importance.

Chirurgie de la Main is the first of two volumes dealing exhaustively with the whole subject, the present volume being limited to a consideration of the pathology and immediate treatment, while the second will deal with plastic repair. This volume is of an essentially practical nature and discusses every possible injury that can occur to the hand, from fractures of the phalanges to infections of the gravest type. Every injury is illustrated by specific examples, and it will be difficult to find any form of injury which is not here minutely described. The text is illustrated partly by photographs and radiographs of actual cases and partly by diagrams thoroughly French in their conception and in their execution. The book obviously describes the work of a surgeon of exceptional ability and observation. It is impossible to exaggerate its value to those who have to handle these cases, and we hope that it will be translated into English.

Surgical Treatment of Hand and Forearm Infections approaches its subject from an entirely different standpoint. Almost one-half of the book is devoted to a consideration of the exact anatomy of the hand, illustrated by really beautiful drawings of special preparations and by radiographs obtained after injection of the various lymph spaces. The second half deals with infections and their treatment as they actually occurred in practice, and this section again is illustrated from photographs of the actual cases, the clinical progress of which is described in detail. In contrast to the other volume, the approach is here that of the scientific researcher, and the information supplied could scarcely be surpassed for exactness of detail. It forms a contribution to the study of its subject of the highest scientific importance, as well as of practical value. It is a worthy sequel to the classical treatise of Kanavel.

RIBBERT'S TEXTBOOK OF PATHOLOGY

Lehrbuch der allgemeinen Pathologie und der pathologischen Anatomie. By H. Ribbert. Twelfth edition, revised by Professor H. Hamperl. (Pp. 634; 700 figures. RM. 27; bound, RM. 29.80.) Berlin: F. C. W. Vogel and Julius Springer. 1939.

Since the first appearance of Ribbert's *Textbook of Pathology* in 1908 successive editions have been produced by such authorities as Monckeburg and Sternberg, and Professor Hamperl, who has undertaken this twelfth edition, must be congratulated on his achievement. The book is arranged along orthodox lines, the first third dealing with general pathology and the rest with the special pathology of individual organs. But it is the presentation which is so admirable. It is detailed enough to satisfy the most exacting, and yet there is little of the prolixity which is the danger of German thoroughness. The innumerable illustrations and diagrams are well chosen, and it is gratifying to find that many of the photomicrographs are taken from sections stained other than by the eternal haematoxylin and eosin.

The touchstones in a book on pathology are the sections on inflammation, tumours, and kidney disease, and Hamperl's work stands the test well. The chapter on inflammation is an admirable account of the orthodox conceptions, but it is regrettable that no mention is made of the views of Rich or Menkin. The descriptive morphology of tumours is excellent, particularly those of the nervous system, though it is disappointing to find a malignant melanoma termed a "melanosarcoma" while Masson's theory is accepted. The section on experimental carcinogenesis is too short, and it is astonishing to find no mention of the "virus tumours." The chapter on kidney disease distinguishes the ischaemic from the inflammatory forms, but does not recognize chronic focal nephritis, though there is rightly greater stress on the scarred pyelonephritic kidney than is commonly made in English textbooks.

A very pleasing feature is that the detailed etymology of all the technical terms is given and the classical names are maintained in spite of the popular support (in Germany) for pure Nordic anatomy. The book is remarkably cheap (about 36s. bound) and can be recommended as a textbook for those who know or wish to improve their German.

SILICOSIS AND ASBESTOSIS

Silicosis and Asbestosis. By Various Authors. Edited by A. J. Lanza, M.D. (Pp. 439; illustrated. 25s. net.) London: Oxford University Press. 1939.

The pneumonoconioses are a relatively recent addition to medical scientific knowledge. Because of their relation to industry, however, they have attracted much attention, and this applies particularly to silicosis and asbestosis. A vast amount of research into these two conditions has been carried out in the last few years, but the results are scattered among journals and reports that are not always readily available. The need for an authoritative, up-to-date, and succinct account of all aspects of these two diseases has been felt for some time. The book, edited by Dr. A. J. Lanza, assistant medical director of the Metropolitan Life Insurance Company and chairman of the Industrial Hygiene Committee of the New York Tuberculosis and Health Association, will undoubtedly supply this want.

The volume is divided into seven sections. The first, by R. R. Sayers and A. J. Lanza, gives a brief but complete historical account of the two conditions. In the second part the same authors lucidly describe aetiology, symptoms, and diagnosis. To the third part, entitled "Roentgen-ray Diagnosis," by Professor Eugene P. Pendergrass, particular attention must be drawn. Its length is justified by the fact that the diagnosis of both silicosis and asbestosis rests largely on radiological appearances. But the author not only gives a detailed account of pathological appearances: he prefaces this with an excellent discussion of the interpretation of chest skiagrams in general, particularly in regard to what constitutes normal appearances. This chapter deserves to be read by every chest physician, but the relative paucity of illustrations and the quality of reproduction of the skiagrams must be deplored.

Pathology is discussed by Dr. S. Roodhouse Gloyne, a recognized expert on this subject, and he is followed by Leroy U. Gardner on experimental pathology, this section containing work hitherto unpublished. Dr. E. L. Middleton, H.M. Inspector of Factories, is responsible for the next section, on the occupational, preventive, and legislative aspects. The volume concludes with a discussion by Dr. A. J. Lanza of the public and economic aspects of silicosis and asbestosis in the United States. The book is exceptionally well printed, on excellent paper, and the references are ample and well chosen.

WORTH'S "SQUINT"

Worth's Squint, or the Binocular Reflexes and the Treatment of Strabismus. By F. Bernard Chavasse, M.A., D.M. Seventh edition. (Pp. 688; 225 figures. 25s.) London: Baillière, Tindall and Cox. 1939.

Mr. Bernard Chavasse of Liverpool has written a new and striking book on the subject of squint. It is entitled *Worth's Squint* and termed a "seventh edition," but actually it is wholly new and could well stand on its own merits. However, that Mr. Chavasse has seen fit to

perpetuate the recognition of the work of Claud Worth is a generous compliment on his part. This new book is a portentous production, very different from Worth's own first edition. But times have changed, and many workers have developed the subject which he helped to explore. Chavasse points out that there is now a new conception of the binocular reflexes and of their development, a new pathology, in which all varieties of squint appear as perversions or subversions of the normal binocular reflexes due to various obstacles operative during the developmental period and after. The effects of this new pathology on diagnosis and treatment may be disconcerting to those who have followed Javal and Worth—despite their written warnings—with more enthusiasm than intelligence.

The book is divided into sections. First comes one on the foundations of binocular reactions. This is graphic and entertaining. There follow sections on development, on anomalies, on diagnosis, on treatment, and on the technique of certain operations. Thus a complete survey is given, on which the author is to be congratulated. If a suggestion may be made it is that the illustrations, which are numerous and are necessarily important in such a volume, are too crowded. On one page (p. 509) there are no fewer than forty-five photographs in a space 4 by 2 inches, and the effort needed to dissociate these pictures is such that the reader neglects them. Again, on page 619 there are fifteen photographs of the steps in an operation, and individual pictures cannot be properly appreciated unless the others are blotted out. Photographs of operations, even when properly spaced, are of doubtful value as compared with well-drawn diagrams. These are matters which the author might reconsider in a future edition. Taken as a whole, however, this work is one which will without doubt attract the attention of all ophthalmic surgeons.

THE BRITANNICA YEARBOOK

Encyclopaedia Britannica Book of the Year 1939. (Pp. 760; illustrated. 45s. net.) London: Encyclopaedia Britannica Co., Ltd. 1939.

Whatever doubts anyone may have had about the wisdom of publishing a yearbook of the dimensions and scope of the volume issued by the Encyclopaedia Britannica have probably now disappeared. The first volume was published last year. In the first place, the start of the new venture was a success. In the second, the pace of events, set perhaps by the astonishing facilities of modern communication and modern transport, makes it increasingly difficult for the ordinary slow-moving democrat to keep up to date. Time has gone totalitarian, and seems to set at nought our neat division of the calendar into days, weeks, and months. Nowadays things happen with indecent speed.

Medical matters are brought before the public by a distinguished team of contributors. Sir Arthur Hurst, for instance, in discussing intestinal auto-intoxication utters a most useful warning to the lay reader when he writes: "Intestinal lavage for a hypothetical poisoning from the bowel is almost equally harmful [as the diarrhoea caused by purgatives], and it has the additional ill effect of making a patient, often already too introspective, still more hypochondriacal." Contact lenses, child welfare, cancer, chemotherapy, public health services, and a useful article on hospitals by Sir Henry Brackenbury are among some of the medical items of exceptional interest. The sections on "mental diseases" and "nervous diseases" might in future editions be included under the one heading of "psychiatry," and the example of the *Encyclopaedia Britannica* itself might be followed by including at the end of an article cross-references to related subjects—for example, see also psychology, psycho-analysis, psychiatry.

The illustrations to the yearbook are uniformly excellent and in themselves often an eloquent comment on events recently current. The Palace of the League of Nations—looking very handsome and very isolated—is suitably shown as it looks from the air. Altogether, the *Book of the Year 1939* has more than justified the new venture, and the editor is to be congratulated on a fine piece of work: among much else that is excellent we welcome "Diary of Events" at the beginning of the volume—from January 1, 1938, to January 31, 1939.

Notes on Books

Sir EDWARD MELLANBY'S Harveian Oration on "The State and Medical Research," which appeared in an abridged form in the *British Medical Journal* of October 22, 1938 (p. 821), has now been published in full (Oliver and Boyd Ltd., 3s. 6d.). A clear and detailed account is given of the part played by the State in the promotion of medical research since the creation of the Medical Research Committee in 1913. As to the future, Sir Edward Mellanby writes: "The difficulty I foresee is not that of obtaining knowledge but of its application to human needs."

In *La Mort des Brûlés: Étude Experimentale* Dr. LOUIS CHRISTOPHE (Paris: Masson et Cie, 40 fr.) has brought forward experimental evidence that tonic products are formed in areas of the skin which have been burnt. These products produce their lethal effects by causing pathological changes in those nuclei of the hypothalamus which control certain aspects of vegetative function. He attributes the general clinical phenomena which follow burns to this disturbance of autonomic activity.

GUSTAVE ROUSSY'S *Le Cancer* is published in Paris by Armand Colin at 15 fr.; bound, 17.50 fr. This small book, by a distinguished French pathologist, is not intended for the specialist and is too technical for the layman, but the general medical reader will find in it a concise summary of current knowledge of the structure, clinical manifestations, and treatment of cancers as well as a guide to laboratory investigations and a moderate discussion of their significance. The information is reliable, and, for the most part, up to date. It is questionable whether some of the recent work—for example, laboratory investigations on heredity—is made intelligible to those unfamiliar with the subject; on the other hand, some sections seem unnecessarily elementary. In the main, however, the compression of a wealth of material has been well carried out, and only the most erudite readers will fail to increase their knowledge of some aspect of cancer; it is the more regrettable, therefore, that a good bibliography is not provided.

Few teachers have been able to inspire both affection and respect in their pupils. Boerhaave in Holland, Babington in London, and Osler, both in America and in England, are notable instances; Harvey Cushing may fairly be placed among them. His seventieth birthday was celebrated with great éclat, and, like his recent visit to receive an honorary degree from the University of Oxford, was made the opportunity to show the place he occupied in the hearts of his many pupils. The bibliography of his writings is a lasting token of their regard. It is published in a limited issue by "The Harvey Cushing Society," which consists of fifty members. Dr. Arnold Klebs writes an excellent introduction and describes the book as a humanized bibliography. Cushing's life history from 1869 with his numerous degrees and the honours which have fallen

to him are given in full. There is a satisfactory bibliography of the 658 items which he has contributed in the form of books, monographs, addresses, and papers from clinics and laboratories. These are followed by appendices and a subject index. But the end is not yet; Cushing is young at 70, and much valuable work is still expected from the maker of cerebral surgery, who is at last enjoying some well-earned leisure. There is an excellent portrait of him in his library, and the foreword and final page contain details of the agreeable format and printing of the book.

The Genuine Works of Hippocrates (Baillière, Tindall and Cox: 13s. 6d.) is a reprint of the well-known English translation of the works of Hippocrates made by Francis Adams, LL.D., a family practitioner, during professional journeys to his patients in the neighbourhood of Banchory in Scotland. It was published by the Old Sydenham Society in two volumes in 1849, and was reprinted in 1886 and 1929. The present issue is printed in America. Dr. Emerson Crosby Kelly, writing the introduction, states that "the numerous and extensive footnotes made by Adams have been deleted, and a continuous and connected picture of medicine in the Golden Age of Greece is the result."

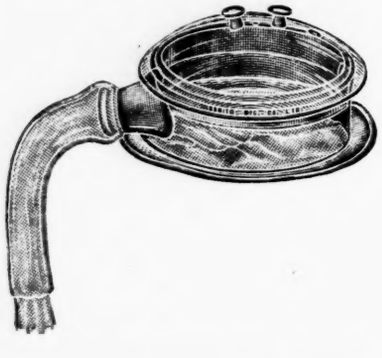
Dr. M. M. FERRAND'S thesis (*Thèse de Paris*, 1939, No. 181) on Marcel Proust shows that this remarkable writer was the subject of asthma from the age of 9 as well as of hay fever, and suffered from obstinate insomnia. His condition was aggravated by his sedentary life, lack of any exercise or fresh air, and the abuse of veronal, caffeine, and other drugs.

Preparations and Appliances

WICK DRAINAGE FROM SUPRAPUBIC BOX

Mr. HAMILTON BAILEY, F.R.C.S. (London, W.1), writes:

I found that the wick drainage of suprapubic cystostomy wounds, as described by Thompson and Wright (*J. Urol.*, 1937, **37**, 721) was extremely effective. Briefly, a large piece of sterile gauze is placed within a length of Paul's soft tubing, one end of the wick being inserted into the suprapubic wound and the other into a sterile bottle beside the bed. Capillary attraction takes away the urine as fast as it is excreted, in the same way as lamp-wick delivers oil to the flame.

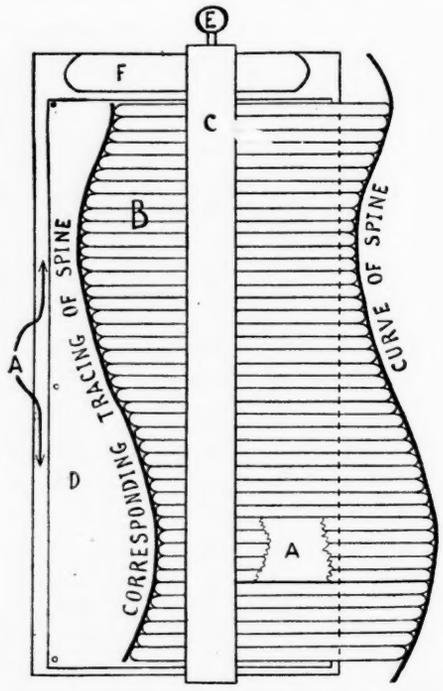


Thompson and Wright complete the dressing by making a ring of kaolin and petroleum jelly round the suprapubic sinus. This works well if the patient keeps still, but in practice to keep still is irksome. By modifying Macdonald's well-known suprapubic box to take the proximal end of the wick in the manner shown in the above figure, the advantages of a wick and the stability of a suprapubic box can be combined.

RECORDING SPINAL CURVATURE

Dr. GEOFFREY C. PETHER (Buxton) writes:

A simple piece of apparatus is being made to my design in the Devonshire Royal Hospital, Buxton. On a previous occasion the use of a strip of malleable lead for recording the progress made in the treatment of a case of ankylosing spondylitis was described. This strip was moulded to the spine on successive occasions and tracings were then made from it on a sheet of paper. As this method was somewhat clumsy an improvement has been devised. A plank of wood (A) about 4 feet by 2 feet is used as a foundation. This is attached by its long side to the wall or to an upright post if convenient. A series of wooden slats (B) about 1 foot by



1 inch by 1/2 inch are placed side by side from one end of the foundation piece to the other, their long axes being at right angles to the long axis of the foundation plank. These slats are provided with small projections at either end and on their outer surface. They prevent the slats from slipping from under a rigid spar (C), which is fixed to the foundation piece above and below so as to be in contact with the front surfaces of the slats, the foundation plank being behind them. This spar should be about 4 inches wide and fixed a little off centre on the foundation plank, though vertical. The slats will thus be able to project for 4 to 5 inches to one side of the foundation plank, though not beyond the other. This other side, which may be termed the near side, is used as a support for the record paper (D), which resembles that used in the older recording system. This paper should be secured above and below on the surface of the foundation plank, the near ends of the slats lying over it.

When a record of the shape of the spine is to be made the patient should stand with his back in line with the outer ends of the slats. These are then pushed one by one towards him until all are in contact with his skin by their outer ends. The slats are then held firmly in position by applying a few turns to a thumb-screw (E), which is attached to a long and narrow face-piece (F) lying in contact with the upper slat. This manœuvre compresses them from above downwards and holds them tightly in position. When all are firmly held the positions of the near ends of the slats are marked off with a pencil on the recording paper. The curve thus obtained is identical with that formed by the outer ends of the slats, which are in contact with the patient's spine. Several successive records may be made on the same paper for comparative purposes. The curves recorded extend from the upper occipital protuberance to the mid-sacrum.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 15 1939

FACTORS OF NATIONAL HEALTH

It has been held that the history of medicine, quite as much as the history of the arts or of politics, should form a part of every man's culture. It may be true that, to a greater degree than any other branch of history, that of medicine is an epitome of the history of civilization. Certainly in the education of the medical practitioner none will doubt the force of Dr. Burnet's contention that "in all countries a place should be found for the history of medicine. The succession of discoveries and doctrines reveals the relativity and progress of human knowedge. It is the antidote to credulity and dogmatism." In almost all the writings of Sir George Newman the value of such a historical approach to his subject has been exemplified, and in his latest work on *The Building of a Nation's Health*[1] it is the essential feature. Unrivalled opportunities in official life and experience have made it possible for Sir George Newman to write the authoritative account of the growth and nature of the complicated machinery which has now been established in England and Wales for improving and fostering the health of the nation. Very worthily and fully he has performed this task. His book is a relatively long one, but this is an almost necessary condition of the adequacy of its content. Nevertheless, it can be read straight through with interest and ease, while as a book of reference it will prove invaluable for its knowledge, accuracy, and comprehensiveness. It traces the foundation and building of the State machinery for promoting the health of the people from early times up to the establishment of the Ministry of Health and the development of the present health functions of local authorities; it describes the setting up and the expansion of the several services which deal with individual and communal health in the home, the school, and the workshop; and it expounds the governance of English medicine and the progress and widening spirit of medical education. In the notes on many of its pages there are most valuable and convenient epitomes of the biographies of eminent persons; its last chapter gives an appreciative sketch of the personality and work of Sir Robert Morant; and there are five excellent portraits of some of those who are prominently mentioned.

It is not merely, however, for the accuracy and interest of its historical details that the volume is noteworthy. Sir George Newman is always concerned with principles quite as much as with facts. There are many passages which indicate his anxiety to emphasize important principles for future guidance. Broadly the arrangement of the book, as well as its words, indicates that, while health questions concern everybody and while the co-operation of various classes of persons is required in relation to them, it is the medical aspects of these questions which must be predominant. Though, happily, the whole responsibility for national health does not fall upon the medical profession, it is essential that the fundamental position and all-important functions of that profession should be recognized and acknowledged, and that this position and these functions should be supported and safeguarded not primarily in the interest of the profession itself but in the interests of the public. Further, within the profession the competence and work of the general practitioner are of pivotal importance. The preservation of his competence and sphere is vital, and neither hospital staff nor public health officer can be an effective substitute for him as the basic agency of the communal health. Scarcely less important is the preservation of the position and rights of the public health medical officer, whether in the Civil Service or in the service of local government authorities. His pursuit of knowledge in the public health sphere must be unfettered and facilitated, his independence of judgment must be preserved, and his right of direct access to the Minister or final responsible authority ought to be an established custom. Sir George Newman has never faltered in his fidelity to these wide principles, and the pages in this book in which he reiterates them are among the most important he has written.

Some readers will doubtless mark, here and there, what they may regard as under-acknowledgment of agencies which might well have been more fully recognized: as, for example, the lack of any mention of the British Medical Association in relation to the establishment of the school medical service, and the mere statement in a footnote to the chapter on nutrition that "the British Medical Association has also taken an active part in this movement." Beyond such minor matters it can scarcely fail to be noticed that there are two large gaps left in the survey as finally presented. The

[1] *The Building of a Nation's Health.* By Sir George Newman, G.B.E., K.C.B., M.D., F.R.C.P. London: Macmillan. (21s.)

author may perhaps with some justice say that this is not so, that his picture is complete up to the point of time at which he ceases to delineate the situation, and that it was no business of his to depict movements which, however important they may prove to be hereafter, have barely begun. Yet such a statement will scarcely suffice; for the need for unifying into one national service the many separate, though excellent, health services now administered under a variety of central and local authorities has become quite evident, and the statement that mental health and psychological medicine are at least as important as physical health and medicine is becoming a truism. The absence of reference to these two matters in Sir George Newman's book cannot be overlooked, though it is understandable, having regard to the author's particular experience. The piecemeal character of the present services can be justified historically, but it should not be complacently accepted as inevitable. It is to be regretted that in so important a work there should be no mention of provision for attention to the mental health of the nation beyond three or four pages dealing with mental deficiency in a relatively perfunctory manner, and one quite incidental mention of the Child Guidance Council. Nevertheless, Sir George Newman is to be congratulated on having produced a fine book, which to many will become indispensable.

MEDICINE STAMP DUTIES

Parliament deserves commendation on its successful revolt against the proposal to repeal the Medicine Stamp Duties. It is true that the rules governing these duties are irrational and absurd, and that it is wrong for the Government to take money from a trade without attempting to regulate it in the public interest. Nevertheless, the duties serve one useful purpose, in that they encourage the disclosure of formulae, and hence their repeal unaccompanied by any legal reform would have made a bad situation still worse by facilitating the mass sale of secret remedies to the public. It is twenty-five years since a Select Committee on Patent Medicines reported to Parliament that a complete reform of the laws relating to proprietary remedies was an urgent necessity. The recent debate in the House of Commons suggests that public attention is being roused and that there is a chance of some attempt being made before long to control the sale of these remedies. If this happens the medical profession ought to be prepared to define its position.

The Select Committee in 1914 pointed out, in vigorous language, that there were few forms of fraud which the law did not permit in relation to the sale of proprietary remedies. No substantial change has been made in the law since that date, and in general the conclusions and comments of this committee still hold good. Although the law is unreformed, restraints imposed by advertising associations and by the Proprietary Association of Great Britain have done much to reduce grossly fraudulent advertisements. This change was recognized by the 1937 Committee on Medicine Stamp Duties when it stated that "matters are not as bad as they were." On the other hand, the volume of the sale of proprietary medicines has increased greatly. In 1914 the turnover was probably about £3,000,000, while to-day it is nearly ten times this amount, and much more is spent on proprietary medicines sold directly to the public than is spent on drugs prescribed by the medical profession. The essential problem is how to control this trade in the interests of public health. The present situation is obviously ludicrous. A small proportion of the drugs consumed by the public is subjected to the fairly rigid control of the Food and Drugs Acts, while the remainder is under no control whatsoever.

Some points are both simple and obvious. All drugs sold to the public should be controlled in respect of their purity, and hence proprietary remedies should be brought under the Food and Drugs Acts. Secret remedies, since they cannot be controlled, should be forbidden. At present new compounds with unknown properties can be distributed to the public, and their sale is only restricted after they have caused enough damage to attract attention. This arrangement is clearly absurd. We should copy the United States and forbid the sale of new compounds to the public unless evidence can be adduced to show that they are harmless. These reforms are obviously desirable, but there remains the more difficult problem of the control of the manner in which drugs are advertised. The experts who prepare the advertisements of proprietary remedies have a single aim—namely, to sell as large a quantity of the remedy as possible. It is difficult to think of any drug which can be guaranteed harmless if the sole aim of the prescriber is to persuade as many persons as he can to take as much of it as their pockets permit them to buy. The medical profession will certainly welcome any legislation that restricts the present extraordinary licence allowed to the vendors of proprietary medicines, or that protects the public from gross fraud and from the danger of accidental poisoning. Beyond that, however, it is necessary to insist that some serious attempt ought to be made to supervise the manner in which drugs are advertised.

BLOOD TRANSFUSION SERVICE FOR WAR

A scheme to establish a blood transfusion service on a large scale to be used in the event of war was outlined in our columns on July 1 (p. 35). Since then widespread appeals have been made in the daily press and by the microphone for volunteers to have their blood tested. Lists of places, usually hospitals or public health laboratories, where such tests can be carried out have been made public. The response has been variable, but certainly the numbers coming forward have not fulfilled expectations. The response has been most successful in those places where it has been possible for the medical officers in charge actually to discuss the necessity for such a transfusion scheme with groups of men and women. Many people, in spite of repeated statements to the contrary in the daily press, have felt there was some danger attached even to the tiny prick required to withdraw one or two drops of blood for testing. Others have said that they are not strong enough to give blood should need arise, and therefore it was not worth while being tested. It is clear that in the next few weeks a real effort must be made to educate public opinion in this matter, and individual medical men can render a useful service in doing so. The actual withdrawal of blood for determination of the correct group is no more dangerous than drawing blood for a blood count, a procedure which never seems to arouse anxiety in anyone. It must also be obvious that if war should come every man, woman, and child in the country are potential casualties and may themselves need a transfusion. They should therefore know their own blood group, as they may be recipients even if they do not want to be donors. There is no evidence that the occasional withdrawal of blood from healthy individuals is in any way harmful. In the London Transfusion Service many donors have given fifty transfusions, while on the Continent, where donors are paid, there are persons in good health who have given as many as 1,000 transfusions. That this is still true under war-time conditions is borne out by experience in Spain, where in Barcelona alone 14,000 people, principally women, gave blood regularly. Some volunteers have been anxious about the possible transference of syphilis. This risk is minimized by the use of the Wassermann reaction or one of its equivalents. In any event the risk here is borne by the recipient and not by the donor. It is probable that the risk of transferring the malaria parasite is greater in practice than that of transferring the spirochaete. In the present scheme this has been obviated by asking volunteers on the form they are asked to fill in whether they have had any serious illness. Those that record malaria are of course excluded. Medical officers who have been enrolling volunteers believe that a great part of the success of such a national scheme depends on the collaboration of general practitioners throughout the country, who can reassure their patients when asked about some of the points that are apparently causing difficulty. They can also encourage those healthy members of the community with whom they come in contact to know their own group just as they advise them to be vaccinated. Membership of a transfusion scheme can, indeed, be regarded as a sort of insurance policy.

CIVILIAN TINNED RATIONS

In line with the general policy of the British Medical Association of giving practical advice to the public on diet and nutrition, we amplify in this week's issue the Government's recommendation to the housewife to lay in a week's supply of non-perishable food to be stored against an emergency. A full account of this and an analysis of foodstuffs, prices, calories, and mineral and vitamin contents will be found at page 128. This information has been modified slightly and reprinted in pamphlet form, which is now available at the price of 2d. a copy under the title of *How to Stock Your A.R.P. Larder*. Apart from the advantage of tiding over the initial period of disorganization that would arise on the outbreak of war, the storing in peace time of a week's food by as many families as possible increases the country's total store, as the wholesalers and retailers must obviously replace their depleted stocks. For this reason we have not provided an "iron ration," but an adequate "tinned ration." It is important that the housewife should know what foodstuffs to buy and in what proportion, so as to enable her to give a well-mixed diet to her family, and so that the supplier may be guided to restock corresponding proportions of foodstuffs believed to be adequate in quality. Without this guidance there might be a tendency to store overmuch of one kind of food and not enough of another. Although close analysis of a diet meant for an emergency in terms of calories, vitamins, and minerals might seem to some a pedantic exercise, these details must be worked out if economy in calories, economy in storage space, and economy of price are to be secured. And although the public may not understand or even be interested in such details, these will at least assure it that the medical profession is giving the closest attention to something which is of great importance to each individual and that its recommendations are not based on whim or arbitrary decision.

ANDROGENS AND OESTROGENS

The recent report by Mr. C. W. Emmens[1] on variables affecting the estimations of androgenic and oestrogenic activity deals extensively with results obtained at the National Research Institute and clearly outlines the factors which may influence the biological assay of sex hormones. The errors involved in the methods of determining the potency of oestrogenic and androgenic substances in terms of the appropriate international standards are discussed in a readily understandable manner. Using crystalline oestrogens it was found that their absolute and relative activities could be easily altered by varying the number of injections into which the dose was divided. This was especially so in the case of oestriol. Certain substances were

[1] *Variables affecting the Estimations of Androgenic and Oestrogenic Activity*. By C. W. Emmens. H.M. Stationery Office, London, 1939. (1s. 3d.)

found to increase the effectiveness of the sex hormones when administered simultaneously with them. Because of such augmenting substances it is pointed out that this makes it impossible to estimate accurately by biological assay the nature or amount of crystalline oestrogens in impure preparations. It would also appear to be impracticable to compare crystalline oestrogens other than oestrone with the international standard, since different techniques yield such divergent results. In the case of crystalline androgens and androgenic extracts the results of different workers using the technique as recommended for the comparison of androgens with the international standard have been in close agreement. When other methods of assay are adopted the results may be influenced by the same factors which affect the estimation of oestrogens. This report brings to light some of the difficulties which may be anticipated by those who are trying to develop a biological method for the measurement of oestrogenic activity which can be carried out on partially purified extracts of blood or urine. It is evident that the results of such tests would be of doubtful significance and of little value in the clinical diagnosis of minor abnormalities of endocrine function. Further advances in this field must come from the development of better chemical methods for the separation, isolation, or estimation of the active principles. Fortunately the therapeutic use of impure extracts of the sex hormones has become almost obsolete, since the different forms of these hormones are now available in a pure condition, and in some cases simple synthetic substances with an identical action may be employed as substitutes.

VITAL STAINING OF THE RETINA

The experimental work by Sorsby, Elkeles, Goodhart, and Morris on staining of the retina in life has already been noted in these columns.[1] They showed that with sulphonated basic dyes it is possible to overcome the blood-brain barrier without damage to the animal and that the dye reaches the retina, though this is not seen through the ophthalmoscope as the normal retina decolorizes the dye. Coloration of the retina was, however, obtained when the tissue was experimentally damaged, and this suggested the staining of pathological lesions in man. The clinical possibilities are thus based upon making visible such lesions in the retina as do not produce an opacity in it—that is, lesions other than haemorrhages and exudates (which are readily enough seen with the ophthalmoscope) might be detected by the staining reaction. A preliminary communication on vital staining by kiton fast green V as a clinical procedure was published by Mr. Arnold Sorsby early this year.[2] At the Oxford Ophthalmological Congress last week he demonstrated a patient who had a traumatic lesion in the left eye. As the right eye was normal no staining could be seen, whereas the left eye, with unequal retinal degeneration over different parts of the fundus, gave unequal staining corresponding to the degree of damage to the areas involved. Thus the atrophic disk was coloured green, the upper half of the retina, which ophthalmoscopically seemed undamaged, appeared as a diffuse greenish haze, and the lower part of the retina, showing extensive pigmentary changes with the ophthalmoscope, took on a deep hue. The dye is of value in diagnosing early papillitis and optic atrophy without marked ophthalmoscopic changes, especially in cases of early temporal pallor. It has also been found useful in detecting perivascular fibrous tissue formation, being especially helpful in the early diagnosis of choroidal sclerosis. Sorsby obtained interesting results in cases of retinal detachment, inasmuch as the degenerate retina around a tear takes up the dye more readily than the rest of the retina, and thus helps in the localization of holes. As the staining is selective of damaged areas and depends upon a vital reaction of the retina, the findings are of a different order from those that could be obtained from the use of monochromatic light. Although the clinical possibilities of the eye have still to be fully worked out, it would appear that a new method of studying the pathological retina has been evolved.

[1] *British Medical Journal*, 1937, **1**, 129.
[2] *Brit. J. Ophthal.*, 1939, **23**, 20.

PUBLIC HEALTH AND SAFETY

No one can glance at the proceedings of the Public Health Congress held in London last November, and now published in a substantial volume,[1] without deploring that services which were intended to build up a community in health and efficiency should now be so largely diverted to guarding it against crazy warfare. The subject of Air Raid Precautions is now of front-rank importance to local authorities, and was discussed at the congress from many points of view —in relation to the provision of air raid shelters, the protection of water supplies and sewage undertakings, and the special problems of mental hospitals. The general experience and opinion with regard to mental hospitals was that many mental patients can and should be taught to protect themselves in emergency, but the point was also made that the large well-equipped mental hospitals on the outskirts of cities, especially in the south and east, might in war time be put to better use than for the accommodation of cases, many of them chronic, of mental disease. The application of A.R.P. principles to water supplies and sewage undertakings was the subject of papers of an elaborate and highly technical character; the question is not merely one of the protection of reservoirs and disposal works, but of adapting the available resources to the emergency which will arise in hitherto sparsely populated areas on receiving evacuated children and others. The problem of the air raid shelter is also being tackled by local authority engineers as well as any engineering job can be tackled when so many factors are unpredictable. As a relief from these grim surmises one turns to such subjects as the movement for physical fitness (here it is stated that the women are far more interested in the fitness movement than the men), to the discussion

[1] *Sixth Public Health Services Congress and Exhibition.* The Congress Organizing Council, 13, Victoria Street, S.W.

on areas of public health administration, to which Sir Henry Brackenbury and Professor A. W. Sheen made interesting contributions, and to the session devoted to the question of co-operation between hospitals and practitioners. Mr. C. M. Power, secretary of Westminster Hospital, put forward some suggestions for the consideration of the British Medical Association and the voluntary hospitals—namely, that every practitioner should, for the purpose of co-operation in the treatment of his patients, be attached to a voluntary hospital, and that the hospitals should be asked to give priority of consideration to all cases referred to them by such attached practitioners, and to arrange for the practitioners to attend short postgraduate courses, to hold a brief term of office as clinical assistants in the out-patient department, and to be represented on the medical committee of the hospital.

A NUTRITION EXPERIMENT IN SHANGHAI

Prevailing conditions in China have adversely affected the Henry Lester Institute of Medical Research, Shanghai, resulting in the curtailment of its important work and the forced retirement of several valued members of the staff. The report covers the two years 1937 and 1938, including a short period of normal activity and a longer one of adjustment to changing circumstances. Dr. H. Gordon Thompson, one of the founders of the Institute, reached the prescribed age for retirement in 1938. He had been largely responsible for the organization of the Division of Clinical Research and Experimental Surgery, and also actively interested in the Holt Fellowship Scheme, whereby selected Chinese graduates are enabled to prosecute postgraduate studies in England. Dr. Thompson's knowledge and experience are now at the disposal of the British Fund for Medical Relief in China, "a good termination for a career spent in working for other people." Despite the difficulties encountered the Institute succeeded in carrying out a large programme of routine and experimental work during these troubled years, and more than a hundred original papers by members of the staff are cited in the report. Considerable attention was devoted to the problem of malnutrition, which showed a high incidence among younger workers in industrialized areas, and an effort was made to demonstrate that the effects of vitamin B_1 deficiency could be eliminated by proper feeding. The normal diet of the factory workers consists chiefly of polished rice. It is the practice to wash this rice in order to remove polishing powders and to wash away unpleasant substances affecting the flavour. These substances arise when rice is stored without the husk, owing to fats in the pericarp becoming rancid and because of the growth of moulds. Further, it has been shown that in rice so stored there is complete destruction of vitamin B_1 within six months; also that the mere process of washing milled rice can convert a product with sufficient vitamin to one with insufficient vitamin. It was therefore necessary to eliminate the need for washing by using no polishing powder and by a method of storage which would avoid deterioration of flavour. The method employed, which has been in use for centuries among Chinese countrymen, was to store the rice in the husk in a dry place, de-husking immediately before milling and consumption. Rice so prepared is palatable, requires no washing, and, even in a highly milled state, contains a sufficiency of vitamin. A group of seventy-five boys were fed on this rice in a diet kitchen for six months. There were no cases of beriberi or any signs of specific deficiency. Further, a remarkable spirit of cheerfulness and feeling of increased well-being was noticeable among these boys, in striking contrast to the apathy and depression of those in other factories. The practical value of the experiment is enhanced by the fact that no additional expense was incurred. The view that the widespread malnutrition in the towns is largely attributable to the modern methods employed in the treatment of foodstuffs is borne out by observations in country districts, where gross signs of deficiency were found to be completely absent and the general state of health appeared to be much better. The report goes so far as to state that "there is little to teach the Chinese countryman in the utilization of his resources and much to be learned from his empirical methods."

HAVELOCK ELLIS

We regret to announce the death of Henry Havelock Ellis, philosopher, essayist, and pioneer in the scientific study of sex phenomena in human life. Born at Croydon on February 2, 1859, he died at Hintlesham, near Ipswich, on July 8, 1939. His seven monumental volumes, *Studies in the Psychology of Sex*, occupied Havelock Ellis for some thirty years. He qualified L.S.A. in 1889, but after a very short period of medical practice devoted himself to scientific and literary work. In 1936 he was elected a Fellow of the Royal College of Physicians of London under By-law XXXVIII (*b*). Though far removed from professional life he continued a member of the British Medical Association from 1892 onwards.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* have been prepared and will soon be ready. They will, however, not be issued with all copies of the *Journal* but only to those readers who ask for them. Owing to the nature of its contents the *Key to Current Medical Literature* is not indexed. Any member or subscriber who wishes to have one or both of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Finance Department, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

Lord Harlech, who as the Right Hon. W. G. A. Ormsby-Gore was Secretary of State for the Colonies, 1936–8, has been elected chairman of the Board of Management of the London School of Hygiene and Tropical Medicine.

WAR WOUNDS AND AIR RAID CASUALTIES

The following is one of a series of lectures on the Treatment of War Wounds and Air Raid Casualties recently delivered at the British Postgraduate Medical School

WOUNDS OF THE PERIPHERAL NERVES AND BLOOD VESSELS

BY

PHILIP H. MITCHINER, C.B.E., M.D., M.S., F.R.C.S.

In war surgery it must be realized that when injury affects either the blood vessels or the peripheral nerves the wound of the surrounding tissues which will undoubtedly accompany the injury must be taken into consideration. The severity of this wound will in many cases render unnecessary any doubt as to either the diagnosis of the extent of the injury to or the treatment of any individual nerves and vessels. It cannot be emphasized too strongly that prompt and thorough excision of the wound track must be in all cases carried out. In doing this the condition of any damaged nerves and vessels may be ascertained and such lesions as are present may be dealt with.

In wounds of peripheral nerves suture should be carried out in all cases provided this can be done without tension on the divided ends; the limb must then be splinted so as to support paralysed muscles in a position of relaxation.

Where blood vessels are injured they should, as a general rule, be completely divided and ligatured above and below. Attempts made to reconstruct the lumen are dangerous, and are likely to result in severe secondary haemorrhage should the wound become infected; moreover, the ultimate results of such a procedure are unsatisfactory.

Injuries to Nerves

Wounds and injuries to the peripheral nerves are commonly met with in war surgery, and, as excision of the wound is required in all cases, failure to recognize the lesion should not occur, as the divided nerve ends will then be apparent; but examination of the limb should not be neglected because excision has to be performed, and it is helpful to the surgeon to know what damage he is likely to encounter. The limb should therefore be examined for any evidence of muscle paralysis or anaesthesia. The following lesions of nerves may be found complicating a wound: (1) contusion; (2) division; (3) partial ablation, where a greater or less extent of the nerve trunk is destroyed and missing.

Contusion of Nerve

In these cases the nerve looks slightly swollen, with its sheath reddened or actually infiltrated with blood. There is no obvious loss of continuity of the nerve fibres, though in most cases loss of conductivity can be demonstrated clinically.

Treatment.—In cases of contusion with no loss of continuity no surgery should be attempted on the nerve trunk, as recovery is the rule, but in the meanwhile the limb should be so splinted that paralysed muscles will be in a relaxed position; if these react to faradism that form of electrical treatment should be employed to stimulate them daily until voluntary contraction reappears. In severe cases in which no faradic response can be obtained galvanic stimulation must be carried out daily until a faradic reaction can be elicited.

Division of Nerve

The trunk of the nerve may be cut clean through as if divided by a knife, but more commonly the ends are ragged and bruised; occasionally the nerve may be only partly divided, often with a portion of metal embedded at the point of injury. In these wound cases, owing to the pulping and damage of the surrounding muscles, the nerve ends are not separated to any great extent and are easy to identify, pick up, and approximate. Anaesthesia of the skin and paralysis of muscles in the area supplied by the nerve below the point of section will of course be present, though they are often confused by the extent and results of the accompanying wound.

Treatment.—In every case the nerve ends must be carefully pared with a very sharp knife till the trunk is clean and unbruised. The nerve sheaths of the peripheral and distal ends should be gently freed by dissection from the surrounding tissues (all damaged muscles having been excised) and approximated by a series of catgut sutures passed through the perineurium, always provided this can be carried out without any undue tension being exerted on, and without rotation of, the nerve ends. When the suture is securely accomplished the nerve at the point of operation should be embedded, if possible, in healthy muscle, but if this is not feasible it should be enwrapped in fascia or fat to prevent adhesions. When completely excised the wound should be closed, with drainage if necessary, and the limb splinted so as to rest the wound and relax any paralysed muscles. In many cases it will be found that infection has already occurred in these wounds before they are seen by a surgeon; in this eventuality it is a common practice to leave the nerve ends unsutured until such time as the infection has cleared up, when they are united by a subsequent operation on the lines already indicated. My own practice, however, is to suture those nerves in the presence of moderate infection, and I can report good results in the majority of cases, with the saving of much time in recovery.

Partial Ablation of Nerve

This is a common condition, seen in most lacerated wounds, and is important not only because the ends of the nerve are widely separated but also because the surgeon may overlook the nerve ends unless careful search is made for them when the wound is excised.

Treatment.—In cases where a gap of several inches is left between the nerve ends it is useless to attempt to carry out any form of primary suture; all that it is advisable to do, in addition to excising the wound, is to clean the cut ends of the nerve and, if possible, pull down and ligature the perineurium over the divided nerve filaments, so as to prevent the formation of a large neuroma and its adhesion to surrounding structures. Subsequently the distal end of the nerve may be implanted laterally into a neighbouring nerve trunk, if one exists, or suitable means, such as tendon transplantation or arthrodesis, undertaken to ensure a useful limb.

Prognosis of Nerve Injuries

It must be realized that further treatment will be necessary for many months in all cases of nerve injury. This

treatment consists in the daily application of the galvanic current and massage to paralysed muscles until such time as they react to faradism, which may then be employed. At the same time it is very necessary to protect the limb from external trauma and, in cases of injuries in the upper extremity, to warn the patient of the danger of holding lighted cigarettes or matches between partially insensitive fingers.

With all nerves the nearer the body they are divided the longer will be the period before recovery is complete; thus when a sciatic nerve is divided in the upper part of the thigh an interval of from two and a half to three years is to be expected before recovery takes place. In the case of a similar wound in the upper limb this period is usually a year or eighteen months, but may be slightly longer.

The prognosis is always best after primary suture where no sepsis has intervened. It is never so satisfactory in the case of delayed suture or sepsis, and no really good results are to be expected after nerve grafting or implantation. The end-results are much better with some nerves than with others. An almost perfect end-result may be anticipated with the sciatic and musculo-spiral (radial) nerves where primary suture has been successful, but with the median and ulnar nerves muscle weakness and sensory disturbances persist in nearly all cases.

Injuries to Blood Vessels

Injuries to blood vessels are extremely common, and, of course, occur in every wound seen, but it is particularly with injuries to the larger vessels of the limbs that we are concerned. In respect to damaged small vessels, which will be encountered in all kinds of wounds, it cannot be emphasized too strongly that in excising any wound it is necessary to remove tissue until spurting vessels are met with in place of the ooze first seen on a wound surface; and, moreover, it should be remembered that the *per primam* healing aimed at by excision is possible only if adequate haemostasis is secured before the wound is closed.

As to damage to the large vessels, it is evident that the cutting off of the blood supply to a wounded limb will not only increase the risk of its death but will also greatly favour the occurrence of infection, and especially those forms due to anaerobic organisms (gas gangrene and tetanus). It is therefore justifiable in many cases where damage has been done to the main vessels of the limb, especially if accompanied by gross muscle-crushing or fracture of the bones, to perform immediate amputation with the object of saving the patient's life.

As with nerve lesions so also in the case of blood vessels we meet with (1) contusion; (2) division; (3) partial ablation. It must be remembered that Nature, by a general fall in blood pressure, the coagulability of the blood (especially in the presence of damaged muscle tissue), and the torsion of the vessel wall which occurs in all severe wounds, does much to arrest haemorrhage, and is often successful even where main vessels are torn across. It is not, however, safe for the doctor to rely on this natural arrest of haemorrhage, as the rise in blood pressure consequent on treatment and the occurrence of infection of these wounds are sufficient to loosen the clot and cause severe reactionary and secondary haemorrhages.

FIRST AID

In such cases the first-aid treatment is of great importance in saving the patient's life. All personnel engaged on first-aid duty must be taught to look for haemorrhage cases first and to give immediate treatment. A pad, improvised or otherwise, is pressed into the wound and held firmly until a dressing and bandage can be applied. If an artery is bleeding pressure is applied to the appropriate "pressure point" until the dressing is in place. All wounds of the lower limbs are to be treated as stretcher cases. The tourniquet is not to be used indiscriminately, but only when it is certain that a large artery is bleeding or when a limb has been torn off, when *it must be applied as close above the wound as possible*. A simple type must be chosen, and one that can be efficiently and rapidly applied even in the dark.

THE TOURNIQUET

Many kinds of tourniquet exist, but probably the improvised types are the most useful. Careful judgment is required in their use; unless a large artery is obviously injured the tourniquet should be applied only after the simpler forms of treatment have failed. The tourniquet should always be put on as far down the limb as possible—that is, near the wound—so that the blood supply of uninjured parts is not interfered with. The rule of relaxing the tourniquet after fifteen minutes should be observed, but it should be left *in situ*, with an orderly ready to tighten it up again if necessary. When a tourniquet has been applied a note must be made of this fact, together with the time of application, on the casualty card; should this not be available the fact of application must be recorded on the patient's forehead. It should be noted that where a tourniquet has been applied and it is subsequently decided that immediate amputation is to be carried out this should be performed without removal of the tourniquet, and immediately above it; this procedure saves the patient very considerable shock.

CLINICAL INDICATIONS

Though haemorrhage is visible to the naked eye it may sometimes be difficult in the case of a penetrating wound to be sure whether deep vessels are damaged or not. In this respect examination of the distal pulse, the possible presence of a pulsating swelling, or deep tension in the limb should be looked for. In other words, with a small penetrating wound internal haemorrhage occurs in a limb just as in the coelomic cavities, and will present the same general signs, though to a lesser extent. As a rule the presence of a persistent tachycardia is an indication that there is vascular damage, usually with arteriovenous communication, unless the patient is developing or has developed gas gangrene, which is the other common cause of continued rapidity in the pulse rate in patients recovering from the effects of wounds.

TREATMENT

Subsequent treatment should aim at ligature of the damaged vessels, and, as Makins pointed out in 1917, simultaneous ligature of the artery and vein leads to retention of more blood in the limb and further improves the conditions necessary for the preservation of its vitality. The surgeon will soon become acquainted with the main arterial trunks, and in the early stages of his career may attempt to carry out operations for the repair of vessel walls and the re-establishment of circulation. This line of treatment is not justified in the majority of cases, as it means submitting the patient to a lengthy operation, the results of which are usually to produce thrombosis at the suture line with obliteration of the vessels; and, where the circulation is maintained, subsequent examination after several months has shown that the majority of these patients develop arterial or arteriovenous aneurysms.

Following ligation of the vessels the limb should be elevated and, if necessary, splinted to secure rest, while

the patient is to be encouraged to contract the muscles gently and massage may be given to aid the circulation. I must repeat that a sharp eye should be kept for gangrene, which is more likely to occur in the lower limb, being very rarely seen in the upper even after ligation of the axillary vessels. Infection also must be watched for. As already stated, it will be ill resisted in the devitalized tissues, so that its appearance is of serious significance and calls for immediate and drastic surgical treatment. In cases in which gas gangrene manifests itself prompt amputation will offer the best chance of saving the patient's life.

Traumatic and Arteriovenous Aneurysms

One of the results of failure to recognize damage to blood vessels in a wound is the subsequent and usually gradual appearance of some sort of traumatic aneurysm. It is not in large wounds that vessel damage is likely to escape notice, but in small penetrating wounds where the exit and entry of the missile are situated at some distance from the lines of the blood vessels.

These small wounds frequently heal without complications, but the patient gradually notices a feeling of fullness and tiredness developing in the limb, especially after use, while in some cases a definite bruit may be detected by him and pulsation be present in the veins distal to the wound. In the early stages the surgeon should be led to suspect the development of such a vascular lesion by the presence of a persistent tachycardia in a patient in whom no obvious cause for this can be demonstrated. As will be seen from the above description, the onset of these aneurysms is usually gradual, and it is several weeks before they are clinically obvious. There are occasions, however, when, just as the wall of an artery may give way and cause secondary haemorrhage, so an arteriovenous communication may manifest itself suddenly. In this case the patient shows all the signs of collapse and internal haemorrhage, while the affected limb will be found distended, with tortuous pulsating veins.

Traumatic Aneurysms

Following an undetected wound in an artery the resultant traumatic aneurysm enlarges gradually in the surrounding tissues, the pressure of which limits the extent of the sac. In superficial vessels such a lesion presents itself as a rounded swelling with expansile pulsation in the course of the vessels, while in deeper tissues a sense of fullness and discomfort is all that is usually manifest. Pressure on the artery above the aneurysmal sac of course obliterates the pulse in this. There may be pain and oedema distal to the aneurysm from pressure on surrounding nerves and veins.

Treatment consists in exposing the sac, ligaturing the main trunk both above and below it, and, where practicable, excising the sac itself, though this is not essential and should not be carried out if it involves any risk of damage to important structures in the sac wall.

Arteriovenous Aneurysms

These occur where a wound involves contiguous vessels such as in the subclavian and axillary regions in the upper limb, the thigh and popliteal regions in the lower limb, and the carotid region in the neck. As already stated, these communications develop gradually in most cases, though rarely they may have a sudden and dramatic onset; it is usually not until at least six weeks or more after the wound that the condition can be diagnosed with certainty, though a persistently rapid pulse in any patient should lead to the suspicion of a developing arteriovenous communication. As a rule the patient is aware both of discomfort and pain and of a bruit in the affected limb. This bruit may often be heard when near the patient and can always be detected on palpation and on auscultation, while the superficial veins below the lesion may generally be seen to be tortuous, distended, and pulsating. It must not be forgotten that such a communication may complicate a fractured skull and occur in the cavernous sinus, between the internal carotid and that blood space, giving rise to distressful cerebral symptoms and a pulsating exophthalmos.

TREATMENT

From the point of view of treatment it makes little difference whether an aneurysmal varix or a varicose aneurysm is present, for, as already enunciated, ligation of both the artery and the vein above and below the communication offers the best opportunity of cure. Unless the patient is seriously inconvenienced by the communication it is wise to defer this ligature of the vessels for at least three months from the time of the wound in order that a collateral circulation may be well established. The operative treatment, however, should not be delayed unduly, since this increases the involvement of surrounding structures and makes operation far more difficult.

Only very rarely is it justifiable to attempt repair of the vessel wall at the point of communication, but where operation has to be undertaken very early, and especially in the lower limb, where doubt may exist as to the efficiency of collateral circulation, such repair may be carried out at times. Even should an aneurysm subsequently occur, the initial procedure will have permitted the patient's collateral circulation to develop in the meanwhile. As stated elsewhere, such repair operations are disappointing in their results, in that in many cases immediate thrombosis arises at the site of operation, and in the vast majority of the remainder the giving way of the scar results in the subsequent formation of an aneurysm.

Conclusion

As will be gathered from the foregoing remarks, injuries of the peripheral blood vessels and nerves are in themselves often unimportant compared with the grave damage that is likely to be caused by aerial bombs. Experience has shown that the most severe wounds may be expected, and these will quite overshadow any vascular and nerve lesions. On the other hand, it is important to recognize and treat these conditions in minor wounds: in the case of injuries of the blood vessels the recognition of damage to the main vessels of a severely wounded limb may often cause the surgeon to determine upon immediate amputation—a step which will save the patient a long and painful convalescence with the chance of a useless and painful limb, and will often be life-saving in its effects—while in the case of a slight wound the recognition and prompt treatment of vessel involvement will avoid the inconvenience and danger of a traumatic or arteriovenous aneurysm.

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"DEMOLITION MELANCHOLIA"

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F. T. THORPE, M.R.C.S., L.R.C.P., D.P.M.

Senior Assistant Medical Officer, West Riding Mental Hospital, Wadsley, Sheffield

The progress of modern civilization is constantly providing new sources of stress and worry leading to mental disturbances in certain members of the population, and I have recently been impressed by the occurrence of a number of cases of depression in which the onset was clearly attributable to the unwilling expulsion of the patient from a lifelong home such as sometimes occurs under the compulsory slum-clearance scheme. It is doubtful whether local authorities fully realize that not infrequently there is a profound emotional shock when elderly people are compelled to leave a residence in which they may have lived for twenty years or more. They are then rehoused in a new estate of lonely roads, where they find it difficult to overcome the initial feeling of the emptiness of life. It is not surprising, therefore, that many instances of mental depression occur, occasionally necessitating admission to a mental hospital.

The aetiology of melancholia is a complex problem, but it is usual to classify cases into two groups—autogenous (constitutional melancholia or manic-depressive insanity), due to heredity; and reactive depression, due to the environment. In the autogenous group the depression is said to result from a lack of inner harmony. There is a more ominous heredity, and the depression is apparently to a large extent independent of environmental conditions. In the reactive depressions, on the other hand, the precipitating factors are outstanding and adequate when viewed in the light of their meaning to the patient, and the symptoms tend to be less acute. In many cases, however, both hereditary and environmental factors are prominent, particularly in the depressions of the involutional period, when it is often difficult to assess the relative importance of the two factors. It is then helpful to consider causation from the standpoint of predisposing factors such as heredity and the critical periods of life, and exciting causes, which may be physical or psychical. The latter include such situations as acute mental fright and shock, disappointments, domestic troubles, business worries, etc.

Illustrative Cases

In the following series of cases, which for descriptive purposes I have called "demolition melancholia," it is significant that the majority of the patients were widows in the involutional period of life. They blamed the environment for their breakdown, and volunteered the statement that they were worried because of enforced removal from their houses or on account of the strangeness of their new surroundings.

Case 1.—A man aged 70 was admitted as a voluntary patient with a history of mental depression for some months and recent thoughts of suicide. Until two years previously he and his crippled wife lived contentedly in a slum quarter of the city, where it was his custom to go out for daily walks in a near-by park and shopping centre. He had lived in this house for twenty-seven years when it was scheduled for demolition under the Housing Act, and he was rehoused on a new estate in the suburbs. He found his new residence too quiet, and he felt miserable because he had nothing to pass the time away and few neighbours to talk to. He stayed in the house for the first three weeks, and when he ventured out for walks found the district too hilly to go very far, and there was nothing in the immediate neighbourhood to interest him. He had varying periods of mild depression until five weeks before admission, when he suddenly became intensely depressed and contemplated cutting his throat with a knife. On admission he was mildly depressed and very sorry for himself. He had good insight into his condition, and there were no delusions or hallucinations. His physical health was fair and his family and personal history negative. He is now rapidly recovering his normal cheerfulness.

Case 2.—A widow aged 46 was admitted as a voluntary patient. She was agitated and depressed, and had threatened to gas herself. She attributed her depression to the worry of removal from a slum house, where she had resided for twenty-six years. On admission she appeared apprehensive and worried, but had good insight, and said she was silly to think of doing harm to herself. Her physical condition was fair, apart from slight goitre. There was no evidence of hyperthyroidism. Menstruation ceased seven months earlier. Her family history was negative, and no previous attacks. In hospital she rapidly improved, and was discharged two months after admission.

Case 3.—A widow aged 63, admitted certified. She lives with her daughter in a slum house, where she had been for the past twenty-two years. Her husband died four years ago. Her certificates state that she was excited and apprehensive, her conversation rambling and irrelevant. She thought the roof of the house was falling in, that she was in danger of her life, and that she dare not go to bed. She rapidly improved after admission, and attributes her fears to the fact that her district was under demolition. All her neighbours had removed, and their houses were being pulled down around her. Her daughter reports that her mother had been mentally peculiar for the past ten years. The patient's sister had a mental breakdown twenty-four years ago. Her physical condition is good and there are prospects of an early discharge.

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Case 5.—A married woman aged 55, admitted under a temporary certificate. She was confused, depressed, and in a state of agitated melancholia. The onset was associated with the worry consequent upon a notice of compulsory purchase of her house by the City Corporation. She had lived there for many years. She rapidly improved after admission, and was discharged recovered one month later.

Case 6.—A married woman aged 68, certified. Before admission she was confused and depressed, heard voices, and said people were talking about her through the window. She said they came and told her that her husband was dead. She thought she was in a convent. The husband states that they had recently removed to a flat in a new estate, where the noises in the rooms above and the strangeness of her surroundings had worried her. She was discharged improved two months after admission. Her personal and family history was negative and her physical condition fair.

Cases 1 and 2 appear to be typical examples of simple melancholia or reactive depression, but in all the six cases there was a quick recovery with a change of environment. There is always the possibility, however, of a serious attempt at suicide.

In the next series of cases there was a more profound psychotic disturbance, as evidenced by the development of relatively fixed hallucinations and delusions which in the involutional period are very apt to have a sexual objective, due, it is said, to a projection of unconscious sexual desires with the waning of actual sexual life.

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the patient is to be encouraged to contract the muscles gently and massage may be given to aid the circulation. I must repeat that a sharp eye should be kept for gangrene, which is more likely to occur in the lower limb, being very rarely seen in the upper even after ligation of the axillary vessels. Infection also must be watched for. As already stated, it will be ill resisted in the devitalized tissues, so that its appearance is of serious significance and calls for immediate and drastic surgical treatment. In cases in which gas gangrene manifests itself prompt amputation will offer the best chance of saving the patient's life.

Traumatic and Arteriovenous Aneurysms

One of the results of failure to recognize damage to blood vessels in a wound is the subsequent and usually gradual appearance of some sort of traumatic aneurysm. It is not in large wounds that vessel damage is likely to escape notice, but in small penetrating wounds where the exit and entry of the missile are situated at some distance from the lines of the blood vessels.

These small wounds frequently heal without complications, but the patient gradually notices a feeling of fullness and tiredness developing in the limb, especially after use, while in some cases a definite bruit may be detected by him and pulsation be present in the veins distal to the wound. In the early stages the surgeon should be led to suspect the development of such a vascular lesion by the presence of a persistent tachycardia in a patient in whom no obvious cause for this can be demonstrated. As will be seen from the above description, the onset of these aneurysms is usually gradual, and it is several weeks before they are clinically obvious. There are occasions, however, when, just as the wall of an artery may give way and cause secondary haemorrhage, so an arteriovenous communication may manifest itself suddenly. In this case the patient shows all the signs of collapse and internal haemorrhage, while the affected limb will be found distended, with tortuous pulsating veins.

Traumatic Aneurysms

Following an undetected wound in an artery the resultant traumatic aneurysm enlarges gradually in the surrounding tissues, the pressure of which limits the extent of the sac. In superficial vessels such a lesion presents itself as a rounded swelling with expansile pulsation in the course of the vessels, while in deeper tissues a sense of fullness and discomfort is all that is usually manifest. Pressure on the artery above the aneurysmal sac of course obliterates the pulse in this. There may be pain and oedema distal to the aneurysm from pressure on surrounding nerves and veins.

Treatment consists in exposing the sac, ligaturing the main trunk both above and below it, and, where practicable, excising the sac itself, though this is not essential and should not be carried out if it involves any risk of damage to important structures in the sac wall.

Arteriovenous Aneurysms

These occur where a wound involves contiguous vessels such as in the subclavian and axillary regions in the upper limb, the thigh and popliteal regions in the lower limb, and the carotid region in the neck. As already stated, these communications develop gradually in most cases, though rarely they may have a sudden and dramatic onset; it is usually not until at least six weeks or more after the wound that the condition can be diagnosed with certainty, though a persistently rapid pulse in any patient should lead to the suspicion of a developing arteriovenous communication. As a rule the patient is aware both of discomfort and pain and of a bruit in the affected limb. This bruit may often be heard when near the patient and can always be detected on palpation and on auscultation, while the superficial veins below the lesion may generally be seen to be tortuous, distended, and pulsating. It must not be forgotten that such a communication may complicate a fractured skull and occur in the cavernous sinus, between the internal carotid and that blood space, giving rise to distressful cerebral symptoms and a pulsating exophthalmos.

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father with a knife and accused him of allowing men to come into her bedroom at night. She improved after admission, and stated that she imagined these things because of the strangeness of the house into which she had recently removed following a slum clearance. There was a history of two previous attacks of melancholia with attempts at suicide three and eight years previously, each lasting about a month, the first following the death of her mother. Her physical condition was fair, apart from obesity and a blood pressure of 190/100. She was discharged recovered three months after admission.

Case 8.—A married woman aged 58, admitted certified. She was said to have been worried and depressed for the past twelve months. She had lived in a house for twenty-four years, but recently had reluctantly removed to a larger house on her daughter's marriage. This worried her, and she became more depressed and apprehensive. She heard doors banging, and thought people were breaking into the house. She heard motor-cars and imagined men were coming to drug her. She began to experience peculiar sensations in her vagina, and complained that men visited her at night and had intercourse with her while she was drugged. Her physical condition was fair and gynaecological examination negative. Her personal and family history was negative. She shows no insight, and there is no mental improvement after nine months in hospital. The delusions appear to be fixed.

Case 9.—A married woman aged 69, admitted certified. She had recently removed to a new estate. She was aggressive and deluded, and said she was being tantalized, that people put electricity on her, and that her tea was poisoned. There was a history of an attempt at suicide by poisoning. On admission she said that she could hear the neighbours working on her with a machine and that she was pregnant by Hitler. She was in feeble health and in poor condition; blood pressure was 160/100. She made no improvement, and died of bronchopneumonia four months after admission.

Discussion

In the above cases there appear to be two main factors responsible for the precipitation of the mental breakdown. The first is the sudden dispossession of a lifelong home to which the patients have probably developed a strong emotional attachment. A widow, for instance, may have sacred memories of her husband. Elderly people, too, are usually intolerant of any change in their routine habits of life and are apt to regard such a possibility with dread. The pre-senile period is a time of life when there is an increased sensitivity to social–environmental disturbances. There is sometimes a mild depression with apprehension, and a tendency to seize upon a slight incident as symbolical of dire calamity. The second factor is their inability to adapt themselves to the unusual surroundings of a new estate. Younger people are able to overcome any difficulties more easily. These are said to be twofold—the initial loneliness among strange neighbours and the cost of living due to higher shop prices and increased rental and travelling expenses.

The National Council of Social Service fully recognizes the problem of the lonely woman in a new housing estate, and emphasizes the need for the organization of the welfare and social activities of these people. Much can be done to prevent the onset of a major mental disorder by work along these lines and by a wider appreciation of the aetiology of mental depression.

I am indebted to Dr. R. Stewart Kennedy for permission to publish these cases and to Dr. G. E. Mould for details of Case 5.

Dr. Dean Lewis, since 1925 professor of surgery at Johns Hopkins University, has resigned his chair on account of ill-health. He has been editor-in-chief of the *Archives of Surgery* from their foundation in 1920, and in 1933 served as president of the American Medical Association.

CIVILIAN TINNED RATION

EMERGENCY STORE FOR A FAMILY OF FIVE

In the House of Commons last week Mr. W. S. Morrison outlined the Government's plans for supplying food to reception areas in the event of war, and recommended that those with means and facilities to do so might now store non-perishable foods in their own homes. It was suggested that the equivalent of one week's supply would be an appropriate reserve over and above the ordinary household stores. Earlier in the year the President of the Board of Trade pointed out that there would be no necessity for the storage of additional water by individual householders. The Food (Defence Plans) Department of the Board of Trade has already drawn up the following list of suitable foodstuffs and has made suggestions about their storage.

Cocoa, plain biscuits (water, lunch, etc.); flour; suet or its equivalent; meat and fish in cans or in glass jars; sugar; milk, canned or dried; tea.

1. Storage space must be dry and cool.
2. Any goods not purchased in cans, jars, or airtight containers should be placed in clean dry tins with tightly fitting lids.
3. Biscuits must be fresh and dry when placed in store.
4. These foodstuffs will not keep indefinitely. It is best to draw from the stock regularly and to replace what has been withdrawn by fresh purchases, so that the stock never contains anything more than a few months old; flour and suet should be used and replaced frequently. Articles might be labelled with the date of purchase, so that the earliest purchases can be withdrawn for use and replaced first.

The housewife who has to buy these foodstuffs is faced with the obvious problem of deciding what quantities she should buy for a family of a given size and what proportions of the different foods should be chosen so as to combine tastiness and culinary possibilities with dietetic needs. In a time of emergency it would seem wise to choose the foodstuffs that are economic from the point of view of dietary requirements. It is true that no one will suffer any great harm if for one or two weeks excess of this or that foodstuff or deficiency of this or that vitamin is incurred. Nevertheless such excess or deficiency should be avoided if possible. We have therefore, on the basis of No. 16 Diet of the British Medical Association's Nutrition Report, worked out an approximate estimate of the calories required and of their division among the principal foodstuffs for a family of five—man, wife, and three children. While shortage of vitamins for a fortnight is not a prospect to be alarmed at, we have included foodstuffs that will give an adequate supply of these.

All this has been translated into terms of foodstuffs which have been chosen for their general availability, cheapness, and economy of storage space. We have avoided anything that is stored in glass simply because glass is breakable and tin is not. If money is no object, other meat such as tongue can be bought and substituted for corned beef. Most of the things recommended can be obtained from home or Empire produce. In the belief that the detailed working out of such a ration in tinned foods might be of use not only to the individual but also to local authorities and possibly even for certain applications in peace time, we have had the selected foods analysed in as full detail as possible. The standard for this has been the recommendation in the *Bulletin of the Health Organization of the League of Nations*, vol. 7, No. 3, June, 1938, which is as follows:

League of Nations Standards

A. *Mineral Requirements* (recommendations to be regarded as approximate and provisional).

1. *Calcium:* Adult, 0.75 gramme.
   Woman, pregnant or lactating, 1.5 gramme.
   Growing children, 1 gramme.
2. *Phosphorus:* Adult, 1 gramme (if calcium is adequate).
3. *Iron:* Adult man, 10 mg.
4. *Iodine:* Less than 0.1 mg.

B. *Vitamin Requirements* (figures to be regarded as approximate and provisional).

1. Vitamin A: Adult, 2,000–4,000 international units.
   Woman, pregnant or lactating, larger amount.
   Children and infants, larger relative amount.
2. Vitamin B_1: Adult, 300 I.U. (in diet of 3,000 cals.).
   Woman, pregnant or lactating, two to three times adult allowance.
   "Nursery school chilren," 200–250 I.U.
   Infants, 10–15 I.U. per 100 cals. of diet.
3. Vitamin C: Adults, 30 mg. ascorbic acid.
   Children, 5–15 mg. ascorbic acid (= 100–300 I.U. vitamin C).
4. Vitamin D: Infants, 150 I.U. Children, 400–500 I.U.

C. *Protein Requirement:*
   Adult, 1 gramme per kg. body weight.
   Woman, pregnant, slightly over 1 gramme per kg. body weight.
   Woman, lactating, definitely over 1 gramme per kg. body weight.

D. *Fat Requirement:*
   80–125 grammes in diet supplying 3,000 cals. (in temperate climates).

The table below lists the foods, tinned and dried, the quantity to be bought, the total calorie value, the amounts

(Family 16 of B.M.A. Report on Nutrition: Man, Wife, Children 6–8, 10–12, 12–14. Man Value Weekly 28.91)

Item	Amt.	Cost (approx.)	Cals.	In Grammes					Mg. Fe	International Units		
				Pro.	CHO	Fat	Ca	P		Vit. A	Vit. B_1	Vit. C
	lb.											
Corned beef†	8	12 oz. tin, 8½d.	11,177	*566.1	—	950.7	0.5806	10.5598	148.78	907.2	399.2	—
Salmon, tinned ..	4	1 tin good red, 1s.	3,665	*395.5	—	219.5	0.4355	4.5360	16.15	2,903.0	544.3	—
Sardines (herrings) ..	4	1 tin 7 oz. net, 6½d.–8½d.	3,992	*450.0	—	230.4	0.4536	4.7900	62.42	2,903.0	544.3	—
Milk, whole condensed, sweetened	2	1 tin 14 oz. net, 8d.	3,202	*84.4	479.0	96.2	2.9938	2.4767	3.08	1,814.4	408.2	—
Milk, whole dried, or evaporated	3 / 7½	20 oz. tin, 2s. 6d. 5d. 1 lb. net, equivalent to 2 pints milk	6,382	*333.4	477.6	329.3	11.8390	9.7978	12.11	9,525.6	1,769.0	—
Sugar	4	1s.	7,439	—	1,814.4	—	—	—	—	—	—	—
Treacle, black	1	5d.	1,143	7.3	271.7	—	0.9571	0.1996	41.60	—	—	—
Golden syrup	1	5d.	1,429	1.4	346.6	—	0.0590	0.0272	3.45	—	—	—
Cocoa	1	Loose, 1s.	2,123	82.1	163.3	120.2	0.3946	3.1298	30.84	—	—	—
Chocolate, plain, eating	1	1s. 4d.	2,563	18.6	271.7	147.4	0.1315	0.3765	11.79	—	—	—
Prunes	1	6d.	821	13.6	183.3	1.4	0.2449	0.4763	14.52	—	408.2	—
Apricots, dried	1	1s. 2d.	1,039	24.9	225.0	1.4	0.2948	0.5443	18.51	—	544.3	—
Raisins	½	3d.	596	5.0	138.8	0.7	0.1452	0.2994	8.62	—	170.1	—
Tomatoes, tinned‡ ..	3	37½ oz. tin, 7½d.	313	16.3	54.4	2.7	0.0953	0.3538	16.33	5,443.2	408.2	1,360.8
,, purée ..	2	14 oz. net, 6d.–6½d.	399	19.1	74.4	1.8	0.1179	0.2722	14.52	3,628.8	272.2	907.2
Carrots, tinned ..	3	1 lb. tin, 6½d.	354	12.2	70.8	1.4	0.3946	0.3946	13.61	27,216.0	816.5	—
Rice	2	8d.	3,302	58.1	740.3	2.7	0.0816	0.8709	4.08	—	—	—
Cornflour	½	3d.	823	1.8	198.7	0.2	0.0408	0.4309	2.04	—	34.0	—
Beans, haricot	1	2½d.	1,306	97.1	206.4	10.2	0.8165	1.4016	30.16	113.4	453.6	—
Peas, green, dried ..	1	3d.	1,465	92.5	259.0	2.7	0.3810	1.8144	24.54	1,134.0	453.6	—
Lentils	½	1½d.	789	45.6	144.9	0.9	0.2427	0.9934	17.30	567.0	476.3	—
Oatmeal	2	5d.	3,774	108.0	635.0	78.0	0.6260	3.5562	37.65	—	2,812.3	—
Biscuits, plain	5	2s. 6d.	9,843	220.0	1,549.0	279.0	0.3629	1.6103	17.46	—	340.2	—
Dripping	1½	9d.	6,328	—	—	680.4	—	—	—	340.2	—	—
Lard	1	5d.	4,218	—	—	453.6	—	—	—	—	—	—
Flour, white	10	1s. 7½d.	16,647	571.5	3,315.8	77.1	0.9072	4.1731	45.36	—	680.4	—
Bacon	1	1s. 4d.	2,495	*40.8	—	250.4	0.0454	0.4355	11.34	—	997.9	—
Eggs	12 Eggs	1s. 6d.	972	*75.6	4.8	69.6	0.4080	1.0920	15.12	5,328.0	252.0	—
Tea	½	1s. 2d.										
Salt	1	2d.										
Cream of tartar ..	1	1s. 2d.										
Baking soda	½	2d.										
Dried onions		Cellophane packets, 3d. each										
			98,599	3,340.9	11,624.9	4,007.9	23.0495	54.6123	621.38	61,823.8	12,784.8	2,268.0
Per man value daily			3,410	115.6 grammes	402.1 grammes	138.6 grammes	0.80 gramme	1.89 grammes	21.5 mg.	2,138 I.U.	442 I.U.	78 I.U.

Calories, Pro., CHO, Fat, and Mineral content taken from *Table of Composition of Foods* (Technical Communication No. 10, Imperial Bureau of Animal Nutrition, Rowett Institute, Aberdeen).

* Animal protein $\frac{1945.8}{28.91} = 67.3$ grammes.

† Tinned lambs' tongues (12 oz. tin, 1s. 2d.) can be substituted for some of the corned beef, 2 lb. of tongue being equivalent to 1¾ lb. of beef.

‡ Tinned blackcurrants (20 oz. net for 10½d.) *or* tinned spinach (15¾ oz. for 6½d.) may be added or substituted as a source of vitamin C.

of protein, carbohydrate, fat, calcium, phosphorus, and iron, and of vitamins A, B_1, and C. The prices given are approximate. It was not possible to estimate the vitamin D. The daily calories per man value amount to 3,410 calories. This store for the family of five gives adequate supplies of most of the necessary constituents of an ordinary well-mixed diet. The fat content is purposely high in view of its high calorie value, and the supply of first-class protein is sufficient.

Hints for Storage

If bacon in tins cannot be obtained or is too expensive it is recommended that 1½ lb. of flour be substituted. Where a family is not to be evacuated 2 lb. of flour could be replaced by 10½ lb. of potatoes. Among other things the potatoes will increase the supply of vitamin C, which is somewhat low in this diet. The addition of 1 lb. of canned spinach or canned blackcurrants would go a long way to rectifying the deficiency of vitamin C, but the figures for these foods canned are not yet available. Tomatoes are essential because of their vitamin content and because of their useful flavouring qualities in an otherwise rather monotonous fare. For those who stay at home 1 lb. of onions might also well be stored as an aid to flavour and appetite. And they can also be obtained dry. Desiccated coconut can be easily stored and would help to vary the sweet dishes. Eggs can be stored wet or dry—that is, in waterglass or in oteg (dry). Spare tins, especially biscuit tins, will be found to be invaluable in storing the various things that are not already put up in tins, such as dried fruit, but they must be thoroughly cleaned and dried before filling.

From the foodstuffs recommended many of the dishes in the B.M.A. *Doctors' Cookery Book* can be made, and quite a variety can be prepared after the first day or two of disorganization has passed. During the first day or two plain biscuits, chocolate, raisins, tinned meat, sardines, tinned tomatoes give ample choice without cooking.

Most of the foodstuffs in the list can be kept for a considerable time and have been chosen so as to depart as little as possible from the usual diet. It is, in effect, a specification for the housewife to work to. The housewife will be well advised to follow the advice to draw from the stock regularly and to replace what has been withdrawn by fresh purchases.

Among the foods that can be stored indefinitely—that is, for a year or longer—are corned beef, lambs' tongues, salmon, sardines, herrings, whole condensed sweetened milk, evaporated milk, sugar, treacle, cocoa, chocolate, and tomato purée. Whole dried milk should not be kept longer than three months; tinned tomatoes, tinned blackcurrants, and tinned spinach not longer than a year. Dried fruit and haricot beans can be kept for over a year in tins. Flour can be kept in a container for months provided there is no old flour left to mix with the new. Oatmeal should not be kept longer than a month, but cornflour and biscuits for two to three months in a sealed container. Tinned butter (15 oz., 1s. 8d.) is available, but not in large quantities. It would be advisable to buy smoked bacon in one piece, and this can be kept a week in a cool place. Those who can may choose to pickle their own eggs, but a week's supply of fresh eggs can always be kept and continuously replaced.

One or Two Dishes

On the assumption that yeast could not be stored, cream of tartar and baking soda are included to make soda bread with the dried milk and water. The recipe for soda bread is as follows:

1 lb. flour
2 teaspoonfuls cream of tartar
1 teaspoonful baking soda
1 teaspoonful salt

About 1/2 pint water or reconstituted milk (unsweetened) to mix to soft dough. Divide into two. Shape like large scone and bake in hot oven.

The following savoury dishes can also be made:

Savoury beans.
Tomato and lentil soup.
Rice and tomato (instead of rice and *cheese*).
Savoury batter with corned beef instead of sausage, as in "toad in the hole."
Use *corned beef* instead of fresh meat in different meat dishes—for example, mince.
Stew *corned beef*, with tomatoes, carrots and/or peas.
Use *salmon*, as well as cold, with white parsley sauce and rice.

And the following puddings and biscuits:

Parkin biscuits.
Chocolate custard.
Blancmange with stewed prunes or apricots.
Batter pudding with raisins.
Boiled rice and syrup.
Treacle layer pudding.
Plum duff.
Pancakes (Yorkshire pudding batter).

We are indebted to Mr. J. E. Sussex of the Grocery Department of the Co-operative Wholesale Society Ltd. for his assistance.

BLOOD TRANSFUSION EMPANELLING CENTRES

We published in the *Journal* of July 1 an account of the organization of a blood transfusion service for war. Arrangements for supply in the London area are being made by the Medical Research Council on behalf of the Ministry of Health. Plans are being made under local arrangements in a number of large towns in the provinces. We print below a full list of centres to which medical men may direct volunteers for this service, an annotation on which appears at page 121 of this issue of the *Journal*.

London Centres

CENTRAL

St. Bartholomew's Hospital, Smithfield, E.C.1.
Royal Free Hospital, Gray's Inn Road, W.
Elizabeth Garrett Anderson Hospital, Euston Road, N.W.1.
St. Mark's Hospital, City Road, E.C.1.
Charing Cross Hospital, Strand, W.C.2.
University College Hospital, Gower Street, W.C.1.
St. Pancras Hospital, St. Pancras Way, N.W.1.
Hospital for Sick Children, Great Ormond Street, W.C.1.
Middlesex Hospital, Mortimer Street, W.1.
St. Mary's Hospital, Praed Street, Paddington, W.2.
Paddington Hospital, Harrow Road, W.9.
Westminster Hospital, Horseferry Road, S.W.
St. Thomas's Hospital, London, S.E.1.

NORTH

Prince of Wales General Hospital, Tottenham, N.15.
North Middlesex County Hospital, Silver Street, Edmonton, N.18.
Group Laboratory, Archway Hospital, Archway Road, N.19.
Royal Northern Hospital, Holloway Road, N.7.

EAST

Queen Mary's Hospital for the East End, Stratford, E.15.
Barking Hospital, Upney Lane, Barking.
Whipps Cross Hospital, Walthamstow.
London Hospital, Whitechapel, E.1.
Metropolitan Hospital, Kingsland Road, E.8.
London Chest Hospital, Victoria Park, E.2.
East Ham Memorial Hospital, East Ham.
Poplar Hospital for Accidents, East India Dock Road, E.14.
Hackney Hospital, Homerton High Street, E.9.
Mile End Hospital, Bancroft Road, E.1.

SOUTH-EAST

King's College Hospital, Denmark Hill, S.E.5.
St. Giles L.C.C. Hospitals, Dulwich.
Croydon General Hospital, London Road, Croydon.
Dulwich Hospital.
Guy's Hospital, St. Thomas Street, S.E.1.
Woolwich War Memorial Hospital, Woolwich.
St. Olave's Hospital, Lower Road, Rotherhithe, S.E.16.
Miller General Hospital, Greenwich Road, S.E.10.
Lewisham Hospital, 390, High Street, S.E.13.
St. Alfege's Hospital, Vanbrugh Hill, S.E.10.
Grove Park Hospital, Lee, S.E.12.
St. Nicholas Hospital, Plumstead, S.E.18.

SOUTH-WEST

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.3.
South London Hospital for Women, Clapham Common, S.W.4.

WEST

Hammersmith Hospital, Ducane Road, W.12.
Acton General Hospital, Gunnersbury Lane, W.3.
King Edward Memorial Hospital, Mattock Lane, Ealing, W.12.
West London Hospital, Hammersmith Road, W.6.

NORTH-WEST

Manor House Hospital, North End Road, N.W.11.
Hampstead General Hospital, Haverstock Hill, N.W.3.
St. John and St. Elizabeth Hospital, 60, Grove End Road, N.W.8.
Municipal Hospital, Brentfield Road, Neasden, N.W.10.
St. Andrew's Hospital, Dollis Hill, N.W.2.
Central Middlesex County Hospital, Acton Lane, Harlesden, N.W.10.

Berks

The Guild Hall, Windsor. From July 5.
Pathology Department, The Royal Infirmary, Reading. 9 to 12 a.m. (five mornings a week).

Bucks

The Town Hall, Slough.
The Health Centre, High Wycombe.

Essex

Tilbury's Seamen's Hospital, Tilbury, Essex.
Oldchurch County Hospital, Romford.
King George V Hospital, Ilford.
Epping Cottage Hospital, Epping.
Chelmsford and Essex Hospital, London Road, Chelmsford.
Southend General Hospital, Prittlewell Chase, Southend.

Herts

Herts County Hospital, 47, North Road, Hertford.
Watford and District Peace Memorial Hospital, Rickmansworth Road, Watford.
West Herts Hospital, Hemel Hempstead, Herts.

Kent

18, Middle Row, Maidstone.
No. 9, Railway Street, Chatham.
A.R.P. Headquarters, Castle Hall, Castle Hill, Rochester.
Public Health Department, Municipal Buildings, Gillingham, Kent.
Kent and Sussex Hospital, Mount Ephraim, Tunbridge Wells.
Bromley and District Hospital, Cromwell Avenue, Bromley, Kent.
Dartford County Hospital, Dartford, Kent.

Middlesex

Emergency Transfusion Caravan, The High Street, Uxbridge.
Redhill County Hospital, Edgware.
Monk's Park Clinic, Harrow Road, Wembley.
Harrow and Wealdstone Hospital, Roxeth Hill, Harrow.
Mount Vernon Hospital, Northwood.
Hillingdon County Hospital, Hillingdon.
Hounslow Hospital, Staines Road, Hounslow.
West Middlesex Hospital, Isleworth.

Surrey

262, High Street, Sutton.
92, Central Road, Worcester Park.
Ambulance Station, Farm Way, Worcester Park.
72, George Street, Croydon.
Royal Hospital, Richmond, Surrey.
Royal Surrey County Hospital, Guildford, Surrey.
East Surrey Hospital, Shrewsbury Road, Redhill, Surrey.
Horton Hospital, Epsom, Surrey.

Provincial Centres

BIRMINGHAM.—Birmingham Blood Transfusion Service, 136, Edmund Street, Birmingham, 3.
BRIGHTON.—Mr. R. L. Austen, Secretary, Brighton and Hove Blood Transfusion Service, 99, Beaconsfield Villas, Brighton, 6.
BRISTOL.—Public Health Office, 40, Princes Street, Bristol. (9 a.m. to 5 p.m.)
BRADFORD.—The Hon. Secretary, Bradford Voluntary Blood Transfusion Service, Pathology Department, Bradford Royal Infirmary.
CAMBRIDGE.—Dr. R. I. N. Greaves, Tennis Court Road, Cambridge. (Monday, Wednesday and Friday, 6 to 8 p.m., starting Monday, July 10.)
COVENTRY.—Coventry Joint Laboratory, Stoney Stanton Road, Coventry.
DERBY.—Pathology Department, Derbyshire Royal Infirmary. (Weekdays 9 a.m. to 5 p.m. ; Saturdays 9 a.m. to 12 noon.)
EXETER.—Pathology Department, Royal Devon and Exeter Hospital.
GLOUCESTER.—The Gloucestershire Royal Infirmary and Eye Institution, Gloucester. (10 to 12 a.m. ; 5 to 8 p.m. ; six days a week.)
HARROGATE.—Harrogate and District Blood Donors' Association, Yorkshire Clinical Laboratories, 6, Victoria Avenue, Harrogate. (9 a.m. to 5 p.m.) Mr. J. Freeman, Hon. Sec., Harrogate and District Blood Donors' Association, 25, Vernon Road, Harrogate.
HASTINGS.—Pathology Department, Royal East Sussex Hospital, Hastings. (Wednesday, 2.30 to 6.30 p.m.)
HULL (asking for women volunteers only).—A.R.P. Department (Women's Voluntary Services), Ferensway, Hull. National Service Department, Burton Buildings, Alfred Gelder Street, Hull. Medical Officer of Health, Health Department, Guildhall, Hull. Pathology Department, Hull Royal Infirmary.
KEIGHLEY.—Dr. Wilson, Keighley and District Victoria Hospital.
LEAMINGTON.—The Warneford General Hospital, Leamington Spa.
LEEDS.—The Secretary, Leeds Blood Transfusion Service, Leeds General Infirmary.
LEICESTER.—Leicester Royal Infirmary. (Between 9 a.m. and 6 p.m.) The City Pathologist, Health Office, Leicester.
LIVERPOOL.—All Ministry of Labour Offices. Gainsborough Café, Dale Street, Liverpool.
MANCHESTER.—The Secretary, Manchester and Salford Blood Transfusion Service, Mark IV, Toc H, Victoria Park, Manchester.
NOTTINGHAM.—Ransom Memorial Laboratory, The General Hospital, Amberley Street, Nottingham.
PORTSMOUTH.—Dr. Radcliffe, Royal Portsmouth Hospital.
NORTHAMPTON.—Pathological Laboratory, General Hospital, Northampton.
PRESTON.—Pathology Department, The Royal Infirmary. (9 to 12 a.m., five mornings a week.)
SALFORD.—See Manchester.
SALISBURY.—Pathology Department, Greville Laboratory, Salisbury General Infirmary.
SOUTHAMPTON.—Pathology Department, Royal South Hants and Southampton Hospital.
SOUTHEND.—Department of Pathology, Southend-on-Sea General Hospital.
SWANSEA.—Beck Laboratory, Swansea General Hospital. (10 to 12 a.m., 5 to 7 p.m., six days a week.)
WARWICK.—The Warneford General Hospital, Leamington Spa.
WOLVERHAMPTON.—Pathology Department, Wolverhampton Royal Infirmary. (10 a.m. to 3 p.m. Tuesdays, Wednesdays, and Thursdays ; 8 to 10 p.m. on Fridays.)

Additional

DOVER.—Royal Victoria Hospital.
RAMSGATE.—Health Office, 25, Albion Place.
FOLKESTONE.—Public Health Department, Foord Road.
CANTERBURY.—Public Health Department, 20a, Stour Street.
BROADSTAIRS.—Public Health Department, Pierremont Hall.
MARGATE.—Public Health Department, 38, Grosvenor Place.
ASHFORD.—Public Health Department, Lloyds Bank Chambers, Bank Street.
COLCHESTER.—Essex County Hospital.

Scotland

DUNDEE.—Royal Infirmary.
EDINBURGH.—Blood Transfusion Organizer, Mr. J. R. Copland, 22, Gilmore Place.
GLASGOW.—Royal Infirmary. Western Infirmary. Victoria Infirmary.
ABERDEEN.—Aberdeen Royal Infirmary.
PERTH.—Perth Royal Infirmary.
INVERNESS.—Royal Northern Infirmary.
DUNFERMLINE.—Dunfermline and West Fife Hospital.
DUMFRIES.—Dumfries and Galloway Royal Infirmary.
STIRLING.—Stirling Royal Infirmary.
FALKIRK.—Falkirk Royal Infirmary.

Wales

CARDIFF.—Department of Pathology, Welsh National School of Medicine, The Parade, Cardiff. (Daily from 10 a.m. to 4.30 p.m.)
BRIDGEND (Glamorgan).—Bridgend County Hospital, Quarella Road.
NEATH (Glamorgan).—West Glamorgan Hospital.
RHONDDA (Glamorgan).—Llwynypia Hospital, Llwynypia.

Reports of Societies

INCIDENCE OF WAR NEUROSES

The fifth annual conference of the Ex-Services Welfare Society was held in London on July 7, when the subject for discussion was "The Incidence of War Neuroses in Civilians and in the Armed Forces." Professor E. MAPOTHER, who took the chair, said that the former conferences had tended to be a little reminiscent, but at the present time it was necessary to borrow from experience to deal with a present possibility. He reminded the gathering that it was proposed only to deal with the functional neuroses, not with organic conditions which might quite easily be confused with them. To be practical the discussion must move from the question of incidence to that of prevention, and a new subject for consideration was the prevention of neurosis among civilians. From a search of the literature no neurosis arising from air raids on civil populations during the last war appeared to have been recorded, but the experience of the last war was not necessarily transferable to another.

Experience in the Navy

Surgeon Vice-Admiral P. T. NICHOLLS (Medical Director-General of the Navy) said that it was impossible to give any accurate figures for these disorders in the Navy during the war ; the methods of classification differed widely, and during the war the method of statistical recording was changed. It was, however, possible to get some idea of the situation by studying the records of a single naval hospital. At Chatham the admissions for neuroses and psychoses rose steadily throughout the war, out of all proportion to the increase in naval personnel. The rise was greater in the summer months, which was thought to be due to the greater activity of submarines.

It was not affected by any naval action. Neurasthenia was the largest group, consisting to a considerable extent of anxiety states; observers were struck by the resemblance of the severer types of anxiety state to the conditions seen in Graves's disease. Hysteria and shell-shock were extremely rare in the Navy, and of the 3 and 2 per cent. respectively so classified at Chatham nearly all were cases of men serving ashore. In the large hospitals in peace time, where men from all three services were treated, hysteria was found to be far commoner among soldiers than among sailors. Of the patients with neuroses who went to hospital only 10 per cent. returned to duty, and only 1 per cent. to full active service. In any future war it could not be hoped that the problem would be easier. The new air menace would interfere with rest periods in harbour and add to the anxiety about the fate of wives and children. Efforts were being made to eliminate cases with a constitutional tendency to neurosis. It was not practicable to institute a psychiatric examination of all recruits, or by psychotherapy to restore neurotics to duty.

Army Service

Major-General ROBERT PRIEST (Army Medical Service) said that all Army officers were trained in management of men, and had lectures on neurosis from medical officers. Whether recruits should be psychiatrically examined on enrolment was still being discussed. A point not sufficiently stressed was the reduction of incidence by keeping up the strength of the forces, also by ensuring regular rations of good quality.

Professor E. MIRA of Barcelona University, lately chief psychiatrist to the Spanish Republican Army, to whom General Priest had referred, said that the incidence of these disorders during the first period of the Spanish war was very low because the men in the fighting forces were free to come and go as they pleased; in the second period, when the Army was organized, the total of temporary discharges owing to war neurosis was not more than 1.5 per 1,000, but soldiers from certain regions seemed to be more liable—that is, those from the north were more resistant than those from the south, but once a northerner developed a neurosis recovery was more difficult. During the last period of the war, with increasing starvation, higher-age conscription, and lack of confidence in the possibility of victory, conditions were extremely difficult, but there was no noticeable increase in war neurosis. In the Air Force men were liable to nervous exhaustion rather than neurosis. The minimum trouble was in the Fifth and Tenth Corps, which were composed of young men of the Communist Party with strong political ideas. The best preventive of neurosis was devotion to the object for which the war was being waged.

The Air Force

Group Captain H. L. BURTON (Royal Air Force Medical Service) pointed out that service cases were seen much earlier than civilian because any abnormality of conduct or any complaint was almost immediately referred back for special attention. This, however, created difficulty, because the cases were seen only as "snapshots," and the diagnosis was not always substantiated. The incidence of neuroses had been fairly constant during recent years—round about 2 per 1,000. There were in the Air Force opportunities of weeding out men who showed early signs of nervous illness, because of the long training and the various schools through which the recruit for flying duty had to pass. Group Captain Burton described a special investigation designed to discover the incidence and causes of breakdown. Neurasthenia occurred mostly in sedentary workers or in those who felt their duties to be beyond their capacity. Anxiety symptoms were found among airmen, occasionally hysteria with amnesia, but usually domestic or financial stress was the cause, not the actual flying. In the matter of treatment prophylaxis was their watchword. All medical officers were receiving a brief course in psychology as it applied to the care of flying personnel, the idea being that such personnel should be kept under observation to detect early manifestations of stress, and that unnecessary stress and fatigue were avoided. Men who broke down should not be invalided back, but, unless they were completely hopeless and incompetent, should remain in uniform and on some form of duty.

Other Experiences

Dr. J. F. E. PRIDEAUX of the Ministry of Pensions said that out of some 2,000 cases he had classified about 30 per cent. as being constitutional neurotics. The neuropath during the last war was the man who had enlisted mostly on conscription or under the Derby scheme, and his occupation was often sedentary. He broke down very quickly—about 75 per cent. broke down after home service only. The physique of these men was generally very much below that of other groups. Dr. GUTTMANN of the Maudsley Hospital, who served in the German Army during the war, was inclined to think that acute neurotic reactions in the front line were very rare. An experienced psychiatrist at a casualty clearing station on the western front collected about seventeen such cases from among the total casualties of a division of 25,000 men during one year. As for the effect of air raids on civilians, air raids came frequently on Freiburg with its population of 80,000, but there was not a single admission to the psychiatric clinics which could be attributed to that origin.

Dr. A. MCGLASHAN spoke from the point of view of a man who had taken part in air raids, and gave a graphic picture of the mind of the pilot as he sat in the dark, listening with strained attention to the sound of his engine, and watching the searchlights combing the sky for him. A high degree of suggestibility was induced. Dr. THOMAS BEATON referred to the question of predisposition. The symptoms of the increased number of patients who came to the psychiatric clinics at the time of the September crisis did not refer actually to the crisis, but there was little doubt that the public tension was the last straw. Dr. IVOR DAVIES of Cardiff believed that there would be an enormous number of minor nervous disorders in a war. Dr. W. M. MCALISTER, who had had experience on a minesweeper, said that one of the striking things was the scarcity of illness among the men engaged in this perilous undertaking. In six months he had only one case of mental illness. Dr. C. S. MYERS referred to the low incidence of neurosis in a well-disciplined regiment, and the higher incidence where discipline was less good. Dr. SIMPSON of Cambridge spoke from his experience as medical officer in a reserve training school; Dr. M. W. BULMAN suggested that the difference in incidence as between Army and Navy might be due to the fact that the stress in the Army was continuous and in the Navy intermittent; Dr. G. GORDON suggested that medical officers should watch out for disturbances of the autonomic nervous system, and thus be able to eliminate a good many bad "King's bargains"; and Dr. HENRY YELLOWLEES pointed out the vast amount of experience in psychology and psychiatry now available as compared with the last war.

At a luncheon subsequent to the conference, Admiral Sir REGINALD TYRWHITT presided, and Sir ADAIR HORE, Permanent Secretary to the Ministry of Pensions, was the principal guest.

CLINICAL PATHOLOGY OF TUBERCULOSIS

At a meeting of the Association of Clinical Pathologists, held in the Coventry Joint Laboratory on July 1, with Dr. A. F. WRIGHT in the chair, the subject for discussion was the clinical pathology of tuberculosis.

Testing Milk for Tubercle Bacilli

Dr. S. ROODHOUSE GLOYNE (London) gave a short account of the routine testing of milk for tubercle bacilli. There were three possible methods of carrying out the test—direct

film examinations of the centrifuged deposit, cultivation on non-glycerinated egg medium, and guinea-pig inoculation. In his experience direct film examination only yielded about one-tenth the number of positives that animal inoculation did. Cultural methods, though valuable for other fluids and for sputum, were of little use for milk-testing, owing to the prevalence of saprophytic aerobic spore-bearing organisms. The guinea-pig test not only gave the highest percentage of positives, but it was the only test that could be used as absolute proof in a court of law. The drawback of the test was, of course, the length of time taken to obtain the answer. He recommended that 100 c.cm. of milk should be centrifuged for half an hour at 3,000 revolutions per minute, that the centrifuged deposit should be treated for the same length of time with normal soda to destroy secondary organisms, and then neutralized with normal hydrochloric acid before inoculation. The animal should be killed not less than five weeks afterwards, and no case must be reported as positive without definite naked-eye signs of tuberculosis (including infection of the regional lymph glands) and the finding of acid-fast bacilli microscopically. Dr. Gloyne's earlier figures—1,560 tests for the years 1928–31—had shown 9.1 per cent. of positives, while his latest figures—3,960 for the years 1935–9—showed only 6.2 per cent. Although the two series were for various reasons not strictly comparable, it did look as though some improvement in the milk supply was at last taking place. A series of 276 pasteurized samples, however, had yielded 2.5 per cent. of positives, which seemed to indicate that not all pasteurization plants were efficient.

Comparison of Culture and Animal Tests for Tubercle Bacilli

Dr. E. N. DAVEY (Gloucester) discussed the relative merits of cultural and animal inoculation methods of isolating the tubercle bacillus. He pointed out the remarkable fact that it was in respect of the bacillus most associated with his name that the postulates of Koch were broken, in that no attempt was commonly made to isolate the organisms from suspected cases by culture. This was due to the difficulty experienced in culturing the organism. This difficulty has to a great extent been overcome by the introduction of the media of Löwenstein, Petragnani, and others. The present results were based on cultures on Löwenstein medium, but later experiences had led him to believe that Petragnani's medium was probably better in respect of speed and richness of growth. He detailed his findings in a series of 112 specimens of sputa, pleural exudates, urines, pus, and cerebrospinal fluid. He had 18 per cent. positive on films, 32 per cent. on cultures, and 29 per cent. positive in animals, when the identical material had been used in each instance. He had in another series of 150 cases 18.5 per cent. positive in films and 33 per cent. positive on cultures. These specimens were selected ones from cases in which the clinical findings and the direct film findings had disagreed. Further, the vast majority of the cultures showed an excellent growth in three weeks, as compared with five to eight weeks taken by the animal method. In another small series of sputa specially selected as negative on film examination from cases chosen by the medical superintendent of the county sanatorium he found three out of twelve were positive on cultural examination.

This brought Dr. Davey to the conclusion that, always allowing that the animal would still for the present be the ultimate test of pathogenicity, the cultural method recommended itself in being equally accurate (no positive film failed to produce a growth), quicker, and cheaper; it did away with the expense and anxieties of an animal house and the procuring of a licence for vivisection. It was an adequate substitute for the animal test in disclosing tubercle infections in "T.B. minus" cases, and would also be a good guide in determining when it was safe to release a patient from isolation in a sanatorium.

Differentiation of Saprophytic Acid-fast Bacteria

Dr. H. SCHWABACHER (London) recalled afresh the wide distribution of saprophytic acid-fast bacilli in dust and water and the inability to differentiate these organisms from tubercle bacilli purely on microscopical evidence. She enumerated the precautions that must be taken to avoid the occurrence of saprophytes in films prepared for direct examination:

(*a*) All containers for pathological material should be cleaned with weak soda solution or bichromate mixture, rinsed out with hot air and finally with glass-distilled water, before being sterilized in the autoclave or hot-air oven.

(*b*) The solutions for the Ziehl-Neelsen stain should be prepared with glass-distilled water. Common baths for staining and decolorizing were to be strongly deprecated, for floating organisms were caught on negative slides.

(*c*) If the slide was not a new one it should be passed through a Bunsen flame twenty-four times, each to-and-fro passage occupying about one second. Only complete charring would remove bacilli once they had been thoroughly fixed on glass.

(*d*) The oil-immersion objective should be wiped in case any acid-fast bacilli should have become attached to it from the previous film. The oil from the bottle should be allowed to fall on the film, care being taken that the rod did not come in contact with the stained preparation, since otherwise acid-fast organisms might be transferred back to the reservoir.

(*e*) If it was required to rub up material on a slide, a drop of water from a cold-water tap should not be used, since saprophytes grew abundantly on the mouths of all cold-water taps.

The primary colony of tubercle bacilli or acid-fast bacilli usually took three weeks to become visible on egg medium. This primary colony should be subcultured on to two tubes of egg medium, the one tube to be used for typing purposes, the other tube, together with a subculture on agar medium, to be cultured at room temperature. If growth occurred at 22° C. the strain was a saprophyte. Tubercle bacilli did not grow at room temperature or on agar medium. For animal inoculation it was usual to inject 1 mg. suspension of a seven- to fourteen-day-old culture intramuscularly into the left thigh of a guinea-pig and a rabbit. The animals were examined after six weeks and four months respectively. A bovine strain produced progressive disseminated tuberculosis in both animals. A human strain produced progressive tuberculous disease in the guinea-pig, while in the rabbit it only produced a local lesion at the site of inoculation and isolated tubercles in the lungs—in other words, non-progressive lesions. A saprophytic acid-fast strain would fail to produce lesions other than a local abscess, however heavy the inoculum.

Excretion of Tubercle Bacilli in Urine

Dr. C. E. DUKES (London) discussed the clinical significance of the excretion of tubercle bacilli in the urine. He defined urinary tuberculosis as a clinical condition characterized by tuberculous lesions in the urinary tract, by the presence of urinary symptoms, and by the excretion of pus and tubercle bacilli in the urine. Tuberculous bacilluria he described as an occult or subclinical tuberculous infection associated with the excretion of tubercle bacilli in the urine but not accompanied by urinary symptoms. These two conditions were both associated with the presence of tubercle bacilli in the urine, but the laboratory findings differed considerably. In tuberculous bacilluria only a few tubercle bacilli were found, and it was rare for them to be discovered in stained films of the centrifuged deposit. Guinea-pig inoculation was nearly always necessary for the demonstration of tuberculous bacilluria. The excretion of tubercle bacilli was intermittent in bacilluria, so that a test might be positive on one occasion and negative on another. The urine was clear in appearance and did not as a rule contain pus or blood, but at the time when the tubercle bacilli were being excreted microscopical examination would reveal an excess of leucocytes in the urine. In cases of tuberculous bacilluria the excretion of tubercle bacilli might cease when the patient's general health improved. In urinary tuberculosis, on the other hand, the urine usually contained large numbers of tubercle bacilli, and they could generally be found in stained films of the centrifuged deposit. Cultures and guinea-pig tests were rarely necessary.

Dr. Dukes described experiments he had carried out which proved that the excretion of tubercle bacilli was generally constant in urinary tuberculosis. Where the bacteria were relatively scarce it was very important to examine a concen-

trated specimen of urine of high specific gravity and containing pus. An early morning specimen of urine was usually best for this purpose. Urinary tuberculosis was almost invariably accompanied by pyuria, and often blood cells were also present. The excretion of tubercle bacilli continued freely so long as an open tuberculous lesion could discharge into the urinary tract. Dr. Dukes illustrated this by photographs of several dissected kidneys showing tuberculous lesions at different stages of development.

Growth-retarding Power of Blood Serum

Dr. W. PAGEL (Cambridge) spoke on the growth-retarding power of the blood serum towards the tubercle bacillus and the chronic type of disseminated tuberculosis. He had found no growth-retarding power towards the tubercle bacillus in the blood serum of approximately 90 per cent. of normal persons and those with the so-called "adult type" of pulmonary tuberculosis (bronchogenic phthisis restricted to the lungs). On the other hand, definite retardation of bacillary growth was observed in about 75 per cent. of cases of "chronic disseminated tuberculosis" (chronic extrapulmonary tuberculosis such as lesions of the urogenital organs, bones, joints, meninges, etc.). This was demonstrated by a method known as "depth cultures" of tubercle bacilli—namely, mixtures of serum with an asparagin and mineral salt solution and a suspension of tubercle bacilli incubated for ten to thirty days. In this way 236 sera had been tested. Growth retardation occurred generally irrespective of the activity of the lesion, though more pronounced in active disease, and was independent of the individual or species resistance to tuberculosis. The serum factor responsible for the retardation of bacillary growth withstands heating for half an hour at 56° C. It could be absorbed by a wide range of acid-fast organisms and *B. coli*, but not by staphylococci and diphtheria bacilli. Absorption was not stimulated by the introduction of growth-promoting factors such as lytic products liberated from the organism used for absorption, nor was it due to an alteration of serum complement. It was not unlikely that "natural antibodies" (perhaps similar to the β-lysins) were responsible for the phenomenon, because after absorption the bacillary growth was also increased in serum from normal individuals and also because specific vaccination did not confer growth-retarding power on the serum.

Relation of Tuberculosis to Silicosis

Dr. A. F. S. SLADDEN (Swansea) gave a statistical summary of pathological examinations of post-mortem lungs from industrial workers supposed to have suffered from silicosis. His analysis dealt mainly with a large group of colliery workers, and, for comparison, with a group of other workers subject to silica hazard but not to coal dust. The frequency, in the first group, of silicosis without any demonstrable tuberculosis was stressed, and the relative incidence of tuberculous disease in the second group was shown to be double that in the first. Dr. Sladden mentioned other reasons for considering the probability of a protective factor against tuberculosis existing in coal dust, and advanced the greater frequency of silicosis without superimposition of tuberculosis among coal-miners in support of this "protective factor."

OXFORD OPHTHALMOLOGICAL CONGRESS

The twenty-eighth annual meeting of the Oxford Ophthalmological Congress brought together a gathering of over one hundred members, with visitors from the United States and from Norway and Sweden. Two mornings were devoted to subjects which have a general as well as a strictly specialist interest—orthoptic training and miners' nystagmus. A dozen other papers were read. Special mention should be made of Dr. DOUGLAS ROBERTSON'S contribution, an argument for regarding the aqueous humour as produced by a process of secretion, and of Mr. TUDOR THOMAS'S demonstration of successful corneal grafts, a demonstration supported by five or six patients. The Doyne memorial lecture—Robert W. Doyne was the founder of the Congress—was delivered by Mr. F. A. WILLIAMSON-NOBLE, whose subject was the ocular consequences of certain chiasmal lesions. Mr. PERCIVAL J. HAY was Master of the Congress, and Keble College offered its usual hospitality.

Orthoptic Training

Many different views were expressed by the score or more of members who took part in the discussion on orthoptic training. One speaker caustically put it: "When a congenital strabismus has been cured orthoptically we so often find an underlying squint which needs operative treatment." The last of the ten "openers" of the discussion, Mr. BERNARD CHAVASSE, said that he looked forward to an increasing realization by orthoptists and their "political" and pseudo-scientific supporters that the measures now regarded as therapeutic were really diagnostic, and as such were of great importance. At all events, he thought it might be helpful to some orthoptists to know that although not every ophthalmic surgeon would subordinate his scientific judgment to political mumbo-jumbo, yet all appreciated the diagnostic information which some person who was expert with the stereoscope and with children could quickly supply.

Dr. HARRISON BUTLER spoke of the work of the Coventry clinic, where for the last two years an orthoptic session has been held twice weekly. He calculated that, taking the trained orthoptist's salary into account, each case cured had cost £10. Possibly half the cured cases might have been cured by other means, so that on that reckoning each cured case which orthoptics alone could cure cost £20, but he thought it was worth it, and was disposed to recommend his committee to give four times the number of sessions and spend twice as much money. One drawback to this method of treatment by persons not medically qualified was mentioned by another Midlands member, who said that he had referred a patient for orthoptic training and had heard nothing further until, two years later, the child was brought back to him with the question whether the training should be continued, £120 having already been spent on it and the child still squinting.

Miners' Nystagmus

The discussion on miners' nystagmus was noteworthy for an intervention by Sir ARNOLD WILSON, M.P., who began by referring to the absence of any book on this subject.[1] When he himself, in collaboration with another, was writing a book on workmen's compensation he looked in vain for any work on miners' nystagmus. There were many papers in the proceedings of scientific societies, but it was impossible for the layman or even the quasi-expert to obtain in a convenient form the material for judgment. He urged the need for a first-class synopsis of the views expressed and the statistics so far available in various countries. He thought there was very little evidence that improved lighting in mines had hitherto had any real effect on nystagmus. It was true that there had been a reduction in the number of new cases by something like 15 to 20 per cent. during the last three years, but that was quite sufficiently accounted for by half a dozen factors, of which lighting need not be one. For example, the age groups of the men at the mine face had altered, and there were fewer older men employed to-day now that coal-cutters were used. The occupational tables published by the Registrar-General showed that the mortality of miners as a whole, and of their wives also, was substantially higher than that of the rest of the community. It was legitimate to deduce that the mining population was less healthy than other occupational groups, and therefore more predisposed to certain diseases, of which nystagmus was one.

[1] A book was published in 1912 by Dr. T. L. Llewellyn entitled *Miners' Nystagmus: Its Cause and Prevention.* (Colliery Guardian Co.)

On the matter of alternative occupation Sir Arnold Wilson had no doubt that the present Royal Commission on Workmen's Compensation would abolish the legal term "light work" and substitute "alternative occupation." He agreed with a previous medical speaker that men of sixty and over should be excluded from the pit, subject to a certain latitude in exceptional cases, for there were, he said, some men who lived by and for their work, and whose expectation of life would be halved if told they must never go down again. He was impressed by the need for more detailed statistical research. He knew enough about medical statistics to pay far greater attention to the doctor who said, "My experience is . . ." than to the doctor who said, "Statistics show . . ."; but statistics had their value if properly prepared by a competent person and not used for purposes other than those in view when they were compiled. The point had been raised in the discussion as to why the Miners Federation was not prepared for the medical examination of men entering the industry. Sir Arnold Wilson said that he shared the view of the Federation. It would be too dangerous a weapon to place in the hands of employers. There might arise such a system of medical examination in every industry as would mean the creation outside the industry of a group of unemployables, anxious and not unfitted for work, but condemned to the lowest levels by reason of medical rejection. Every industry so far as possible ought to be a cross-section of the physical conditions and age groups of society, and carry its 10 or 15 per cent. of partially disabled, partially ineffective persons. It was done by Henry Ford—to take one example, and by no means a good one—who was able to provide for 20-odd per cent. of persons who had lost a limb or an eye in his factories and give them a good livelihood.

One feature of the whole discussion on miners' nystagmus was the point that malingering was negligible. Dr. HARRISON BUTLER, who opened the discussion, said that the number of malingerers was not worth taking into account, and Dr. CAMPBELL ORR of Wolverhampton said that in his own extensive experience he could recall only two men who were definitely malingering. Dr. Butler felt that little progress could be made until the term "miners' neurosis" was substituted. As against this Mr. HERBERT CAIGER said that while they were all agreed that the underlying cause of the disablement was a neurosis, the neurologists on the British Medical Association committee had also stated that in the psychoneurotic symptoms of which miners complained there was nothing specific to their occupation. The dilemma was, therefore, that if it continued to be called miners' nystagmus it suggested something not specific to the disablement, while if it were called neurosis it could not be put in the schedule.

The discussion, to which a dozen ophthalmologists practising in mining areas contributed, was so excellent that Sir Arnold Wilson begged the congress not to bury it in its archives, and said that if he were sent 150 copies he would undertake personally to place them in the hands of interested Members of Parliament.

The Yorkshire Tuberculosis Society, which was resuscitated two years ago, under the presidency of Dr. N. TATTERSALL, recently held its annual meeting at Killingbeck Sanatorium, at the invitation of Dr. W. SANTON GILMOUR. Four meetings are held during the winter, and the programme just completed has included papers by Dr. PETER EDWARDS on methods of obtaining complete collapse of the lung; by Dr. JOHN T. INGRAM on the diagnosis and treatment of tuberculous skin lesions; by Dr. H. L. CROCKATT on the pros and cons of arthrodesis; by Dr. MARGARET SHARP on the diagnosis of abdominal tuberculosis in children; and by Dr. S. P. WILSON on cases of transient positive sputum.

Local News

NEW ZEALAND

THE CANCER CAMPAIGN

[FROM OUR WELLINGTON CORRESPONDENT]

As the result of the visit to New Zealand in 1929 of Mr. W. Sampson Handley, authorized by the Duke of York, now King George VI, a branch of the British Empire Cancer Campaign was established in New Zealand. This branch has the support of and could, if necessary, have financial assistance from the Government. However, in accordance with the policy of the society, donations were invited from the citizens of New Zealand for the purpose of engaging the interest of individuals in what is in large measure a personal rather than a Government problem. From first to last a sum approaching £100,000 has been raised in this way. It was considered advisable that the organization of a New Zealand branch of the British Empire Cancer Campaign should follow that of the B.M.A. Accordingly, there are various divisions corresponding to the provinces of New Zealand, and these divisions are autonomous but co-ordinated in the central branch council. This branch joins with the various State and the Commonwealth cancer societies of Australia, which hold an annual joint conference. The last conference, in February of this year, was held in Wellington under the auspices of both the Commonwealth and the Dominion Governments.

Research Laboratories

One of the first activities of the New Zealand Branch was to establish, in connexion with the medical school at Dunedin, a medical research laboratory. A New Zealander, Dr. A. M. Begg, who was working at the Stroud Laboratory in London, was appointed director of the New Zealand Cancer Research Laboratory, and he has the assistance of Mr. Hall as technician. Dr. Begg is at present engaged on cancer research work in England, and is being retained beyond the ordinary period of his study leave by Dr. Gye in connexion with a line of research which shows considerable promise.

A useful part of the New Zealand organization has been the establishment and equipment of a radiophysics laboratory under the control of Professor White and Mr. Strong. This is also a research laboratory. Its special function is to calibrate the dosage of *x*-ray machines, the effect of which is to regulate and standardize dosage with a view to the best therapeutic results. The benefit derived from the work done in this radiophysics laboratory relates not only to the patients receiving treatment but also to the safety of the radiotherapists and nurses who operate the various plants. Radium has been bought as necessary, and that in unsuitable dosage or containers has been reconditioned.

Cancer Clinics

The other activities of the New Zealand Branch are on more or less regular lines. Education of the public has not been neglected, and it has been done in such a way as to avoid cancer phobia. Perhaps the main practical activity has been the establishment of cancer clinics at the metropolitan hospitals. Before these clinics were established the treatment of cancer was unsatisfactory and rather haphazard. They have been active for approximately a decade, with the result that a considerable amount of statistical information has now been collected. This will lead to statistical research when data obtained in New Zealand are correlated with similar data in Australia. Funds of the Branch have been used for giving necessary financial assistance to friends or attendants pro-

ceeding with patients from country districts to the metropolitan cancer clinics. With regard to the collection and collation of statistics it has been found advisable at times to send a medical inspector to the provincial clinics mainly for the purpose of seeing that statistical forms are suitable and of uniform type and that details of the records are given full attention. An indication that the work of the New Zealand Branch of the Campaign has been satisfactory is that this body has the honour of controlling the organization and treatment of cancer with the full authority of the New Zealand Government and also of the hospital boards which administer the hospital system of the Dominion.

ENGLAND AND WALES

Defects of Hygiene in British Ships

The report for 1938 of the medical officer of health to the Port Health Authority, Manchester, states that 3,195 vessels entered the port during the year. The cosmopolitan nature of the maritime trade of this inland port is shown in a table giving the number of crews of various nationalities on vessels inspected during the year. Twenty-four different countries are represented. Seamen suffering from venereal disease are treated at Salford Municipal Centre, the nearest institution to the docks; fifty-four British and sixty foreign seamen were treated during the year. The number of ships in which nuisances were found by inspectors is still high, and the proportion is greater in British ships than in those of other nations. The report stresses three points which demand attention: the question of storage of fresh water; the position of the galley in cargo vessels; and the care and maintenance of the crews' quarters. It is pointed out that nothing is said in the Merchant Shipping Acts of the quantity of drinking water a vessel should carry or how and where it should be carried. The arrangements for drinking water, the most essential commodity in a ship, are to a considerable extent left to chance. With regard to galleys, these are too often situated on the fore end of the fiddley casing, with forward bulkheads fitted with barred windows opening on to two side pocket bunker hatches, while the skylight, if open, receives a full share of smoke, fumes, and heavy dust rising from the stokehold. In such conditions it is impossible for the cook to keep food or galley reasonably clean, while the proximity of the stokehold increases heat discomfort in the Tropics. It is suggested that responsibility should be definitely allocated for care and maintenance of crews' quarters instead of the prevailing system—a possible cleaning every Saturday morning.

The Unmarried Mother and her Child

The twenty-first anniversary of the National Council for the Unmarried Mother and her Child was celebrated at Drapers Hall, London, under the presidency of Lord Gorell. The large number of public men and women who sent messages of congratulation and good wishes included the Prime Minister, who was president of the council from 1928 to 1931, and wrote that his association with the work had been long and interesting, and that the organization had won the appreciation of all interested in the welfare of children and their mothers. It was recalled that it was Mr. Neville Chamberlain who sponsored the first Bill which the National Council promoted in 1920, a Bill the chief objects of which were the legitimizing of children by the subsequent marriage of their parents, and an increase of the amount payable by the father under an affiliation order—a kind of forerunner of the Legitimacy Act of 1926. The assistant secretary to the Home Office brought to the gathering a message of thanks from the Home Secretary for the work of the National Council in respect of "care and protection cases" under the Children and Young Persons Act, 1933, and also for its useful help in regard to alien unmarried mothers who arrive pregnant or become pregnant in this country. Mrs. Walter Elliot also brought a message from her husband, the Minister of Health. Sir George Newman contrasted the conditions obtaining to-day in regard to the mortality of illegitimate infants with those of forty years ago, and said that what had been accomplished by the National Council gave ample grounds for thanksgiving and satisfaction. On the proposition of Dr. W. G. Willoughby, an original member of the Council, the meeting placed on record its gratitude to Mrs. H. A. L. Fisher, who has been chairman during the whole of the twenty-one years.

In celebration of the coming-of-age Mrs. Fisher has written a pamphlet entitled *Twenty-one Years*, in which she describes in a matter-of-fact way the uphill work which has been done. It was during the war that attention was drawn to this uncultivated corner of the child welfare field, particularly by a vigorous reference in the Registrar-General's report for 1916, in which it was pointed out that the ratio of the mortality of illegitimate infants to that of legitimate during the first week of life had increased from 170 per cent. in 1907 to over 200 per cent. During the last five years the death rate of the illegitimate has been below 100, for the last two years 88, and although it is, of course, far too high, it can no longer be said to be more than twice that of the legitimate. The National Council came into existence as the result of a representative conference at the Mansion House in 1918. Its main work is comprehended under three heads: (1) individual case inquiries, placing those concerned in touch with people and organizations able to help them; (2) the encouragement of the provision of suitable homes and hostels; and (3) legal reform. Mrs. Fisher says: "We still believe, and all our experience has strengthened the belief, that keeping together the mother and child not only helps the moral and physical well-being of both, but by giving to the mother a responsibility, something to work and live for, helps to prevent a second illegitimate birth."

Radiological Research at the Middlesex Hospital

A research fellowship in medical radiology at the Middlesex Hospital Medical School, to the value of £100 per annum, has been endowed by the Duke of Bedford in memory of the late Duchess of Bedford. This fellowship, which is to be known as the "Duchess of Bedford Fellowship," is intended to further experimental research in medical radiology. It is open to qualified men or women of any nationality, and may be held for a period not exceeding three years. The gift has been especially welcomed by the Medical School Council as constituting the first permanent endowment in aid of postgraduate research. It will be remembered by many that the late Duchess of Bedford was keenly interested in the subject of radiology in medicine, and she was a member of the Society of Radiographers.

Sheffield Hospital Petitions for Charter

The copy of a petition of the Jessop Hospital for Women, Sheffield, praying for the grant of a charter, was forwarded by the Lord President of the Privy Council to the General Medical Council and laid before the Executive Committee of that body at its last meeting. The preamble to the draft charter stated that the work and object of the hospital now include attendance upon cases of midwifery and diseases peculiar to women either in the institution or in patients' own homes, the training of medical students in obstetrics and gynaecology, the training of intending midwives, and the maintenance of a centre and laboratories for the development of research work and the prevention of disease. It was stated that the research laboratory for the investigation of the cause and prevention of puerperal sepsis was established in 1930. The laboratory was recognized by the Medical Research Council in 1931, and had been financially assisted both

by that Council and by the British Medical Association. In 1938 over 3,500 patients were admitted to the hospital, and over 24,000 attendances made by out-patients. The grounds on which the petition was presented were stated to be that difficulties had from time to time arisen in the administration of the property and funds of the hospital through trustees under rules and regulations which were found to be insufficient for general purposes, and that the board was of opinion that the objects of the hospital would be greatly promoted if a charter were granted. The Executive Committee resolved to inform the Privy Council Office that it did not desire to offer any observations on the petition. It took the same course in the case of an application by the Children's Hospital, Sheffield, transmitted to the Council from the Board of Trade, for a licence under Section 18 of the Companies Act, 1929, to enable the hospital to be registered without the use of the word "Limited."

West London Medico-Chirurgical Society

The fifty-seventh annual dinner of the West London Medico-Chirurgical Society was held at the Trocadero Restaurant on July 5, with the president, Dr. Maurice Shaw, in the chair. In proposing "The Society" and the health of its president Sir Allan Powell, Mayor of the Royal Borough of Kensington, discussed the close co-operation there had always been in Kensington between the general practitioners and the medical officer of health, and referred to recent local public health measures and, in particular, to the methods adopted to ensure the purity of the water in the swimming baths. Dr. Maurice Shaw recalled Sir Allan Powell's long association with the Metropolitan Asylums Board, and went on to describe the progress the Society had made during the past twelve months, and notably the arrangements whereby students of the West London Hospital had been admitted to associate membership. "Medico-chirurgical" was not, he thought, a happy compound, but it appeared that the Greeks had no name and presumably no use for surgeons. The toast of "The Guests and Kindred Societies" was proposed by Mr. James Kemble, who welcomed especially Professor J. B. S. Haldane and the presidents of the three Royal Colleges and of the Hunterian Society and the Chelsea Clinical Society, as well as the medical representatives of the three Services. Replies to this toast were made by Mr. Herbert Eason, principal of the University of London, Sir Girling Ball, president of the Royal Society of Medicine, and Surgeon Vice-Admiral Percival Nicholls, Medical Director-General, Royal Navy.

SCOTLAND

The British Association at Dundee

The British Association for the Advancement of Science will hold its annual meeting at Dundee, under the presidency of Sir Albert Seward, who delivers his inaugural address on the afternoon of Wednesday, August 30, on "The Western Isles through the Mists of Ages." The proceedings of Section B (Chemistry) begin on August 31 with the presidential address by Professor E. K. Rideal on "Film Reactions as a New Approach to Biology," and the rest of the day will be devoted to a joint discussion with Section I (Physiology) on tissue respiration, to be opened by Professor R. A. Peters. Dr. Malcolm Dixon will deal with catalysis in tissue respiration (catatorulin), and Dr. H. Theorell of Stockholm with the flavoproteins. After an account of cytochrome and similar compounds by Professor D. Keilin, Dr. F. Dickens will consider the interpretation of intermediary metabolism from measurement of tissue respiration, and Dr. J. H. Quaster that of narcosis. Dr. S. Ochoa will deal with carbon dioxide evolution and cocarboxylase. Professor H. S. Raper will discuss the control of tissue respiration, and other aspects of the subject will be presented by Dr. D. E. Green, Sir F. Gowland Hopkins, Dr. H. A. Krebs, Dr. T. Mann, and Dr. E. P. Poulton. On August 31 in Section D (Zoology) Professor J. Ritchie will speak on perspective in evolution. On September 1 Professor W. E. Le Gros Clark will give his presidential address to Section H on the scope and limitations of physical anthropology, and Mr. R. J. Bartlett, in Section J, on measurement in psychology; while the Section of Physiology meets all day at St. Andrews to discuss the problem of pain. The only item for Sunday, September 3, is an address by Sir Richard Gregory on science and social ethics. On September 4 Sections H and I will combine to discuss nutrition and physique; on September 5 they will discuss, separately, the teaching of anthropology and the assessment of physical fitness. The last item on the programme is a debate on nutrition by the Division for the Social and International Relations of Science, on September 6.

Royal (Dick) Veterinary College

At the annual prize-giving of the Royal (Dick) Veterinary College in Edinburgh Sir T. Hudson Beare, who presided, said that progress was being made with the erection of the new buildings of the college, and some of the laboratories would be in use by October. Sir Arthur Olver, Principal of the College, stated that greatly improved facilities and increased staff were essential for the extended courses of instruction now required. New diseases and disease conditions had arisen in recent years. The importance of farm livestock had greatly increased, and the future of the veterinary profession lay in the proper study of conditions which had been forced upon the farming community by competition from abroad. They were faced with the teaching of 400 students, or three times as many as the college had originally been designed to accommodate, and they had to provide for a course of five years instead of four as previously. In their effort to improve and increase the accommodation they had been greatly helped by the Department of Agriculture for Scotland, but still more funds were required. Lord Provost Henry Steele, who distributed the prizes, spoke of the importance of veterinary science to the State, and assured the College of the support of the Edinburgh Corporation.

Aberdeen University Graduation

At the summer graduation in Aberdeen University on July 6 Principal W. Hamilton Fyfe conferred the honorary degree of LL.D. upon Emeritus Professor Alexander Low, M.D. Professor T. M. Taylor, in presenting Professor Low for the degree, said that he had begun his association with this university in 1886 when he entered King's College as a student of arts. Later he studied medicine, and on graduating joined the staff of the university, being lecturer in embryology: in 1925 he was appointed to the chair of anatomy. His work on the development of the lower jaw was recognized as one of the classics in embryology, and he had made many notable contributions to anthropology. The degree of M.D. was conferred upon five graduates, and the degrees of M.B. and Ch.B. upon sixty-four graduands. Principal Fyfe, in his address, congratulated the graduates upon their good fortune in having a career immediately open to them as compared with the tragic fate of many unemployed. He said that as a nation we were committed to defend what we called democracy, a way of life in which men and women were free to seek the truth, to declare it, and to settle their difficulties by free discussion. We were determined to preserve this way of life, but this committed us to determining that democracy was worth defending at the utmost cost. If democracy was genuinely valued, then they must not tolerate the dangerous diseases of our social life, the tragedy of unemployment, the callous sacrifice of youth, and the persistence of poverty and malnutrition. Reforms were only won by hard, persistent thinking and by

obstinate determination. Never had any generation been faced with a finer challenge, and he hoped that, like many Scotsmen who had gone before them, his listeners would accept the challenge with energy and courage.

Crippled Children in South-East Scotland

The running expenses of the Princess Margaret Rose Hospital, Edinburgh, amounted last year to £15,726, which was met to the extent of £11,803 by maintenance charges, leaving a deficit of £3,923 to be provided from hospital funds and subscriptions. The hospital's endowment fund stands at £13,225 after the expenditure of £8,569 last year on necessary buildings and equipment. These figures were given at the annual meeting of the hospital, when it was also stated that the hospital would be required in war time for the treatment of air raid casualties, primarily for bone and joint injuries, and that existing patients would be removed to their homes or to houses in the country which had been approved by the Department of Health. Mr. W. A. Cochrane said that the services of the hospital had increased considerably during the past year, and that the work had nearly doubled since 1936. There were 277 admissions last year, and 1,500 out-patients were being dealt with (as compared with 100 in 1933) through thirty-five local clinics. Large numbers of patients suffering from infantile paralysis are now being treated at an early stage, and many of them were discharged with very little defect remaining. Many of the patients in cases in which there was not complete recovery could still be rendered fit to earn their living, especially if training institutes could be made available.

Correspondence

Clinical Research in General Practice

SIR,—The article by Dr. Percy L. Backus on psychoneuroses (*Supplement*, July 1, p. 1) and certain correspondence on the above subject which has appeared recently in your *Journal* prompt this letter. Dr. Backus states that the work on which he reports was carried out in the quieter months of the year because of the time involved in note-taking. As he seems to magnify the difficulty of the task which he undertook, and as this may deter others from undertaking similar or other investigations, I should like to suggest a simple method whereby such investigations can be carried out the whole year round, even in the largest of industrial practices.

For the purpose of any system of note-taking for medical records a definite method of investigation and interrogation must first be devised. This can be left to the inclination of the individual practitioner, but once devised, if strictly adhered to, then positive findings only need be recorded. Questions which give negative answers can be ignored, and so also can negative investigations. Such records can be of little use without the "key," but with the "key" very few words can convey a vast amount of information to the reader, and this no matter how many years may elapse between the recording and the studying of the recorded observations. Note-taking need never be a handicap, and in retaining the confidence of the patient it can be time-saving.

Dr. Backus supplies a series of figures which he says require a correction to be kept in mind. Even with this correction in mind they are difficult to analyse, and perhaps impossible to use as a standard of comparison. For this reason may I suggest a method which is quite simple to carry out and capable of general use. It is by means of "signals," and what I think is described in commercial undertakings as the "block method" of analysis. Many of these signalling systems are on the market, but they are rather expensive. I have found paper clips with little bits of different-coloured strips of gummed paper attached to them are quite effective, and a complete signalling system of these only costs a few pence. The analysis which Dr. Backus wished could be carried out with one colour of "signal," and utilizing three different positions on the record card—the left edge, the middle, and the right edge. These would give the "three main classes of disorder," and if a division of the second is desired this could be accomplished by two different colours. In practice the method is to begin a new list for each week, and at the end of the week to count the signals. The numbers of these will be the bases of the analyses. At the present time in my own work, in order to investigate some points of clinical interest, four colours and five different positions on the history sheet are being used, and out of those possible combinations fifteen graphs are being constructed. I do not think that this particular study takes up more than half an hour of work in the week.

These suggestions are being put forward because I have always found that where simple methods of investigation and analysis can be devised, extensive clinical research in general practice can be carried out with little effort, and it is, of course, very fascinating.—I am, etc.,

Halifax, July 5. A. GARVIE.

Treatment of Gonorrhoea in General Practice

SIR,—The introduction into the treatment of gonorrhoea of a series of new chemotherapeutic substances may be said to have revived the interest of the profession in that disease. One or two recent undocumented letters from medical men, recording failure to reproduce in their practices the 80 to 90 per cent. successes claimed in the published reports of recognized specialists, make it apparent that the modern treatment of gonorrhoea is not quite so simple a thing as the mere swallowing by patients of a number of tablets for three or four days. Although the opinions of the specialists are still somewhat fluid on the questions of optimum dosage and reliable tests of cure, their views have crystallized to the extent of being able to lay down certain broad rules for the use of sulphonamides in gonorrhoea. It is painfully evident to many of these specialists that those rules are unknown and unobserved by practitioners who have neither the facilities nor the training for making accurate diagnosis or tests of cure. To secure proper use of these potent new remedies for gonorrhoea the co-operation of general practitioners, medical officers of health, and venereologists is desirable. To that end I commend to the notice of all interested the letter addressed by the medical officer of health for Birmingham to practitioners in his area. I am obliged to Dr. H. P. Newsholme for permission to quote from his letter:

Cautions in relation to the Use of Sulphonamides (including M & B 693) in the Treatment of Gonorrhoea

I am advised that the attention of practitioners should be drawn to certain difficulties and dangers attending the use of sulphonamide drugs (including M & B 693) in connexion with their present extensive application to the treatment of gonorrhoea in both males and females. While such treatment can yield almost startlingly rapid effects, both immediate and on occasion ultimate, it should particularly be noted that unless proper care is taken the results can be disastrous. In the majority of cases the symptoms of the disease will quickly disappear with this form of therapy, but this does not mean

that the patient is cured. Frequently the patient is in the position of a "carrier," and is a menace to the general public, and especially to his own immediate family. To obviate such dangers practitioners are urged that no patient should be discharged as cured, or should be told that he or she is cured, until proper tests of cure have been made and the patient has been under observation for at least three months after cessation of treatment.

The tests of cure after completion of treatment should include at least three films and three cultures; it is emphasized that films without cultures are not reliable. A blood examination, Wassermann reaction, and gonococcal complement-fixation test should also be carried out. It is recognized that cultural tests are difficult for the practitioner to undertake, as the medium must be specially prepared and the specimen incubated forthwith. This difficulty can be met by sending the patient to a venereal diseases clinic for the tests to be performed there and the practitioner informed of the results. It has also to be remembered that the sulphonamide compounds are toxic to certain individuals, and the recipients should be seen regularly and watched carefully for any signs of toxaemia, particularly gastric symptoms, dermatitis, leucopenia, etc.

It is to be hoped that other medical officers of health will follow Dr. Newsholme's lead. One would add the suggestion that administrative medical officers should assist general practitioners by providing a diagnostic outfit transmissible by post to the public health laboratory. The bacteriological tests of cure are of too delicate a nature to allow of such provision being made for them; but practitioners should be advised to arrange for these and other necessary tests to be made privately or to refer the patients (with adequate case notes) to the nearest venereal diseases clinic. The advent of these new remedies should, as Sir Edward Mellanby pointed out in the recent report of the Medical Research Council, result in a notable reduction in the occurrence of gonococcal infection. Wisely used, early, and with every patient kept under observation until cure was certain, the result should be a fall in the incidence of gonorrhoea vastly greater than that obtained in syphilis in the course of the last twenty years. Wisely used! Already the percentage of defaulting patients has risen sharply at many clinics since the introduction of these sulphonamide drugs. It would seem that some measure of legal compulsion will be required before one of the most easily preventable, and now one of the most readily curable, of all diseases is finally conquered.—I am, etc.,

Essex, July 3. ROBERT FORGAN.

Sulphanilamide in the Air: A Warning

SIR,—This class of drugs when given in full doses or in conditions of idiosyncrasy is liable to interfere with oxygen exchange by the production of methaemoglobin or sulphaemoglobin in the circulating blood.

I have recently seen a pilot who was noticed to be suffering from the symptoms of severe anoxaemia as a result of flying at the moderate altitude of about 13,000 feet. It was found that he had been taking full doses of sulphanilamide for septic tonsillitis just previous to flying. Similar cases have been noted in America and, I believe, in our own Air Force. A full dose of one of these drugs taken shortly before flying is said to lower an aviator's "ceiling" by about 5,000 feet. Persons intending to fly as passengers or, more particularly, as members of an aircraft crew should be warned of the danger of taking these drugs within a few days of flying. I presume that a few days would suffice to ensure elimination of the drug from the system.—I am, etc.,

F. P. MACKIE,
Croydon, July 7. Medical Adviser, Imperial Airways Ltd.

Lay Psychotherapy

SIR,—The published conclusions of the British Medical Association Mental Health Committee with regard to the training and recognition of lay psychotherapists were recently considered by the committee of the British branch of the International General Medical Society for Psychotherapy (I.G.M.S.P.), who would like to submit the following comments for consideration.

While admitting the present disproportion between patients requiring psychological treatment and those qualified to give it, the solution of this problem by the training of lay psychotherapists is open to the following objections.

1. The proposed lay psychotherapist, unlike other medical ancillaries, will in fact carry out work which is indistinguishable from that undertaken by the medical psychotherapist, and consequently must come into direct competition with him.

2. The possibility of relegation of this work to a lay assistant lowers the status of psychotherapy and so of psychological medicine as a whole, with the result that the present endeavours to improve both undergraduate and postgraduate teaching in this subject may be relaxed, to the detriment of medicine as a whole.

3. There are serious practical difficulties in the proposed relationship between the diagnosing physician and the lay therapist which may be fraught with serious danger to the patient. Psychiatric diagnoses can often only be arrived at in the course of prolonged observation while the patient is undergoing treatment, and it is difficult to see how the lay psychotherapist could be trained in a reasonable space of time to undertake this and at the same time assess the importance of physical factors which so frequently intervene.

4. The important issue at present is to increase the facilities for and adequacy of the training of medical psychologists, since at present there are lamentably few who are really competent to supervise treatment by a lay psychotherapist. The provision of training for the latter may only prove a makeshift policy which will delay the major necessity. Furthermore, it seems premature to institute training for the laity when the criteria for medical training for the specialty have not yet been settled.

Finally, it is still more important to awaken the public to the importance of adequate precaution and treatment in the mental health field.—We are, etc.,

E. B. STRAUSS,
President, British Branch, I.G.M.S.P.
H. CRICHTON-MILLER,
Vice-President, I.G.M.S.P.
R. HARGREAVES,
July 6. Secretary, British Branch, I.G.M.S.P.

SIR,—In the discussion about the merits of medical and lay psychotherapy the economic factor is often overlooked. The cost of training and setting up a medical psychologist is in the region of several thousand pounds. Five years of medical training will cost £300 a year, a minimum of two years' postgraduate study of psychopathology will cost even more, as the student must pay the heavy fees necessary for a self-analysis, often amounting to £200, and there are no effective house-appointments available for this branch of medicine. If he buys a general practice the capital outlay needed for introduction and house purchase will be perhaps £4,000; if, on the other hand, he is aiming at consultant work the young psychotherapist must wait some years before he can even meet his expenses, and several more years before he is earning sufficient income to give an adequate return for his invested capital. During these years of study and practice he could as a black-coated worker have earned salary totalling over £2,000, which must be added to the debit side of the balance sheet. Altogether the successful prac-

tice of a medical psychologist represents a capital outlay of about £8,000.

How is such a man to earn sufficient return for this investment, and in so doing what proportion of his time can he devote to paying patients and to non-paying patients? A surgeon is willing to operate on ten cases for charity in the hope of charging one patient a high fee. A consultant physician will work four days a week at honorary appointments and earn fifty guineas in one day in Harley Street. A general practitioner, too, must take the rough with the smooth, but a steady income is well assured to him. A psychotherapist, on the other hand, must work for twenty hours a week at two guineas an hour before he can make a consultant's income, leaving him a maximum of twenty hours a week to devote to clinic work. Now the proportion of hospital-class patients to paying patients throughout the whole population is about ten to one, which is roughly the proportion of time allocated to each class by the surgeon, the physician, and the industrial practitioner. A psychotherapist working on the same lines would earn only eight guineas a week, or £400 a year, as gross income for his capital outlay of £8,000.

It is clear, then, that under the present system of psychological practice by persons who have had to undergo an expensive medical training, and then have trodden the thorny path to consultant work, the benefits of psychotherapy which are needed by all are permanently barred to four-fifths of the population. And this will continue to be so until the ranks of practising psychotherapists are reinforced by the recruitment and training of candidates whose training costs are reduced to a minimum, who need no large outlay of capital to set up in practice, and whose slender income from private work can be supplemented by a regular endowment or stipend. Such a class of persons is to hand in the clergy, whose talents might well be diverted from non-productive work to the ministry of individual psychotherapy. The training of an ordinand is at least as adequate a foundation for the specialized postgraduate study of psychology as is the equipment of a newly qualified medical student, whose only approach to sexology is through gynaecology and midwifery. It is indeed open to serious question whether the study of the body as an anatomical structure, a biophysical machine, and a locus of disease is in any way calculated to develop that sympathetic understanding of the patient as a human individual which is essential to success in psychological work. It is in the solution of difficulties of everyday life, the psychopathology of the "normal" individual, that an endowed clergy with psychological training could be of supreme value, leaving the treatment of the psychoneuroses to the few analytical psychiatrists at present available.—I am, etc.,

Hayle, Cornwall, July 5. D. STANLEY-JONES.

Rapid Diagnosis of Diphtheria

SIR,—Dr. MacIntyre (Infectious Diseases Hospital, Plaistow), Dr. Byers (Isolation Hospital, Bromley), and I have recently collaborated in an investigation of Manzullo's rapid methods of diagnosis by means of tellurite swabs. We confirm the view expressed in your issue of June 24 that the clinical test—namely, the application of a tellurite swab to the throat—is unreliable, and cannot replace methods of diagnosis now in use.

Manzullo also described a second method, involving the incubation of inoculated swabs in a special tellurite broth in the laboratory. In our experience with swabs from thirty-five cases of *gravis*, "intermediate," and *mitis* types, this method also is untrustworthy. In twenty of these cases there were positive agreements between the results of the Manzullo swabs and those on the usual bacteriological media (Loeffler slopes and Horgan and Marshall plates); in three there were negative agreements. In twelve cases there were disagreements, the Manzullo swab being negative in nine which were clinically and bacteriologically positive, and positive in three which were clinically and bacteriologically negative. The "false positive" Manzullo tests demonstrated once again the well-known fact that a variety of organisms other than K.L.B. reduce tellurite.—I am, etc.,

H. J. PARISH.

Wellcome Physiological Research Laboratories, Beckenham, July 11.

Compulsory Diphtheria Immunization

SIR,—With reference to your leading article on "Prevention" in the *British Medical Journal* of July 8, 1939, whilst mentioning that diphtheria immunization is compulsory in France, no reference is made that this has been compulsory in Guernsey, a part of Great Britain, since April 15, 1939.—I am, etc.,

ROWAN W. REVELL,
Health Office, Guernsey, July 8. Medical Officer of Health.

Vitamins in the "Doctors' Cookery Book"

SIR,—Recently I was privileged to attend the National Conference on Nutrition so admirably organized by the British Medical Association. A copy of the *Doctors' Cookery Book* was kindly presented to me and I have examined it carefully. The book is most simple and attractive in form. Coming from such an influential source it is, however, unfortunate that the diets are not planned to provide vitamins on a more generous scale. Without extra cost the supply of vitamins could be substantially increased. The "Doctors" have appealed to popular taste by catering on accustomed lines. To provide a satisfactory vitamin content at minimum cost some change in food habits is necessitated.

Using the average vitamin values of such foods as have been assessed in terms of international units, I have reckoned the total vitamin values of the foodstuffs in the "Budget for Week I" and compared them with the optimal supply.

Vitamin Quantities per Person per Day

	Int. Units Vitamin A	Int. Units Vitamin D	Vitamin C (mg. Ascorbic Acid)	Int. Units Vitamin B_1
Doctors' Diet, Week I: White bread and flour	3,300	about 360	41	397
Doctors' Diet, Week I: Wholemeal bread and wholemeal flour	3,300+ some in wheat germ	about 360	41	930
Minimal allowance ..	1,400 to 3,000	150	30	300
Optimal supply ..	3,000 to 5,000	400* to 1,500	60 adult, 40-50 infants, 100 or more for older children†	600 to 1,300‡

* League of Nations figure, 400. L. J. Harris in *Vitamins in Theory and Practice* gives 1,500 as a preventive dose for infants and 3,000 as a curative dose for rickets.

† Maximum retention of ascorbic acid in children at level of 7.5 mg. ascorbic acid per kilo of body weight—that is, roughly 3.5 mg. per 1 lb. of body weight (M. Swartz Rose).

‡ Increased demand during pregnancy, lactation, and in toxaemias, 1,500 int. units.

Calories can be estimated per man value per day, women and children receiving proportionately less. Vitamin values

must be estimated per head per day, as women and children require more than adult men. Except for vitamin A the "doctors' diet" falls short of the desired level. It is not possible to estimate vitamin D exactly, as although the body oil of fresh herrings is rich in vitamin D no figures are as yet available for the flesh. The supply of vitamin D can be increased by substituting 1 lb. of canned salmon for 1 lb. of beef. Beef has a negligible value for vitamin D, while (on the average) canned salmon, red variety, supplies 224 international units per ounce and the cheaper pink salmon 196 international units per ounce. (Compare this with average butter, 14 international units per ounce, and milk only 0.7.) At the Nutrition Conference the tin-opener was unfairly blamed as a cause of malnutrition. If used with intelligence it opens up many cheap sources of protein of good quality, minerals, and vitamins, and by economizing fuel for cooking sets free more money to be spent on food. The amount of vitamin C in the "doctors' diet" is enough to prevent scurvy with a margin of safety. For health an amount equal to three or four times the minimum is indicated as the optimum level. By replacing some of the flour, cereals, and sugar by more potatoes the vitamin C supply can be increased without raising the cost.

The "cookery book is for women who have to get a full pennyworth of food value for every penny of their outlay," but there is no hint that much better value for money is provided by wholemeal bread and flour than by the impoverished white materials. Presumably, therefore, most families trying conscientiously to follow the advice in the cookery book will continue to buy white bread and white flour. Beriberi has occurred on diets containing from 71 to 382 international units vitamin B_1 per day. The "doctors' diet" satisfies the low level of intake for vitamin B_1 suggested by the League of Nations (1937) of 10 international units per 100 calories of food. This will prevent beriberi, but for proper nutrition the desirable amount is assessed by most investigators at a much higher level, even as high as six to seven times the minimum. Baker and Wright advised 600 to 750. R. R. Williams (1938) puts the true optimum at 1,300 international units a day. Drummond and Wilbraham in *The Englishman's Food* (1939) in their analyses of diets past and present show that before the introduction of roller milling the poorest classes consumed from 1,000 to 1,500 international units a day, so that this high level is no unattainable ideal.

Whole cereal products are the only cheap foods that can be eaten in large enough quantites to ensure a liberal supply of this vitamin. By changing the bread and flour from white to wholemeal in the "doctors' diet" the vitamin B_1 intake is more than doubled (see Table), and this increase is an index of parallel increments of other members of the vitamin B complex, of vitamins A and E, of protein, and of a good mineral mixture. Vitamin E contained in cereal germ is concerned in the reproductive cycle of women. Treatment with wheat-germ oil rich in vitamin E has secured the birth of living children from mothers who previously had repeated miscarriages and could not produce a living child, presumably because their white bread diet lacked sufficient vitamin E. Wholemeal cereals also make good the lack of iron which in the white bread diet is responsible for much of the nutritional anaemia in women and children of the poorer classes. In short, there can be no white *versus* brown bread controversy except among those who are ignorant of the facts. No one measure could do so much to remedy the inadequacies of the ordinary working-class diet as the substitution of whole cereal products for the denuded grain products generally consumed.

In its new edition let us hope that the *Doctors' Cookery Book* will be remodelled after consultation with those doctors who in Cheshire* (*New English Weekly*, April 26, 1939) are doing such good work in educating their patients in the value of wholemeal bread and wholesome food. Their procedure is the most promising method of fulfilling the aim of the National Health Insurance Act to prevent as well as to cure sickness.—I am, etc.,

London, N.W.3, July 4. V. G. PLIMMER.

"Medical Testament" on Nutrition

SIR,—The Cheshire Panel Committee is to be congratulated on publishing this testament. There are several significant aspects: the recognition that sickness is not being prevented; the admission of failure; and the confession of responsibility in this failure. Of more practical importance is the emphasis on diet deficiency in the causation of sickness.

This testament is a challenge to all medical practitioners, more particularly to those concerned with the working of the National Health Insurance Act. There are ways open to all medical practitioners of making good these past failures to prevent sickness. One of these is to study the dietetic habits of an insured person presenting himself or herself for acceptance on the panel. Again, when a panel patient comes for treatment the question, "Why did this patient fall ill?" should be asked. Again a study of the dietetic habits will throw some light on this question. The following cases illustrate this method.

Case 1.—A female aged 19 was sent by her panel doctor as a suspected case of tuberculosis of the lungs. The history showed that six weeks before she had had an attack of influenza and was in bed one week; she returned to work four weeks previously and fell ill again; she had not returned to work since. The patient was examined at the dispensary. No evidence of tuberculosis was found, either clinical or radiological, and there was no sputum. Her dietetic habits showed that her appetite had always been finicky. She habitually refused meat, fat, and green vegetables; she preferred fried potatoes for dinner and white bread. Her weight was 92 lb., the average weight of a girl of 13 years. She had always been thin and delicate. I informed her panel doctor that no evidence of tuberculosis had been found, and advised a period of convalescent treatment. Observation at the dispensary was recommended on account of her dietetic habits. Suitable advice was also given to the patient personally. The purpose of convalescent treatment in the main is to correct faulty diet habits and establish sound habits.

Case 2.—A female aged 40 was sent by her panel doctor, tuberculosis of the lungs being suspected. The history showed that six years before she spat up blood. She was examined at a general hospital, but no evidence of lung disease was found. She had had a cough on and off. Twelve weeks previously she had a septic thumb and was under hospital treatment. Three weeks previously she spat up blood. When she attended at the dispensary for examination there were clinical signs of old pleurisy, which were confirmed by *x*-ray examination. The sputum test was negative. Her general condition showed marked pallor of the lips, pyorrhoea, and her weight was 99½ lb. Her dietetic habits showed that for many years she had refused cabbage, fat, and butter; she preferred margarine, also white bread. Her panel doctor was informed that no evidence of any active tuberculosis had been found, but that in view of the faulty diet habits a period of convalescent treatment was recommended and observation at the dispensary. Advice regarding diet was given. The patient has been under observation at the dispensary during the past twelve months, and at her last visit she reported that she had

* *British Medical Journal Supplement*, April 15, 1939, p. 157.

followed the advice regarding diet and had been at work regularly.

Case 3.—A schoolboy aged 18 years was sent to the dispensary by a private practitioner on February 23, 1939, because his father, who is tuberculous, was worried about him. The history showed that he had had cough for a month and had been spitting. On examination at the dispensary no evidence of tuberculosis was found; the sputum and *x*-ray examinations were negative. The dietetic history showed that the boy eats meat and fat but dislikes cabbage and never eats it. This appears to be a family habit, shared by his father and also other members of the family. His private doctor was informed that no evidence of tuberculosis had been found, but that in view of the family history of tuberculosis and the faulty habit of diet he should be kept under observation. This faulty diet was discussed with both the patient and his mother, who was advised to establish the rule of the table—namely: No afters if any piece of food left on the first plate at dinner time. I propose to keep this boy and also his family under observation until a proper and sound habit of diet has been established.

Case 4.—This illustrates another type of faulty diet. The patient was a young man aged 17 years, whose daily diet was as follows:

1st meal, 8 a.m.—White bread and margarine, cup of tea.
2nd meal, 10 a.m.—White bread and margarine, cup of tea.
3rd meal, 1 p.m.—Meat served daily, but only eats a little on Sundays. Fat always left. Sausages on two days. Potatoes daily. Never eats cabbage; green peas only occasionally; puddings occasionally. White bread on two days.
4th meal, 4 p.m.—Cakes and cup of tea.
5th meal, 6 p.m.—White bread and margarine. Cakes and cup of tea. No lettuce for twelve months.
6th meal, Supper.—Fish and chips and white bread occasionally.

The father stated that the boy had a large appetite, and would eat a loaf of white bread daily, with margarine preferred to butter. This boy has pulmonary tuberculosis and was admitted to a sanatorium in August, 1937, and has not yet been discharged. He left school at the age of 14, and stated that at school he had had two lessons on his body, but did not remember any lessons on food.

These cases are representative of many similar ones that have been investigated in this way during the past five years. Diets deficient in green vegetables and fat and those with an excessive amount of carbohydrates appear to create a diathesis predisposing to the manifestation of tuberculosis and other infections. I would suggest that the detection and correction of these faulty diet habits offer a new field of preventive medicine to the general practitioner, and also to medical men particularly associated with industry, national health insurance, and public health service with all its branches.

The fourth and other similar cases lead one to ask: "Is the education provided in rate-aided schools playing an adequate part in the prevention of sickness and maintenance of health?"—I am, etc.,

P. A. GALPIN,
May 30. Tuberculosis Officer, County Borough of West Ham.

SIR,—Our attention has just been drawn to the two interesting letters from Sir Albert Howard and Dr. Lionel James Picton appearing in the *British Medical Journal* of May 27 (p. 1106). The references printed in support of the Medical Testament, the work of Sir Albert Howard at Indore and elsewhere, the writings of Viscount Lymington, notably in *Famine in England*, and Dr. Wrench's *Wheel of Health* all provide overwhelming confirmation of the truth that you cannot for long take from the soil more than you put back into it.

But the question many medical men will want answered is what steps can be taken to overcome the danger of disease being spread by the practices advocated by Sir Albert Howard and other workers in this field. Only a few days ago we heard from Durban that an outbreak of amoebic dysentery was thought to have resulted from Indians treating their vegetable farms with human excreta. Such cases as this would surely be multiplied alarmingly unless adequate precautions were taken to prevent their occurrence.

We believe many of your readers will be wondering what protection against infection is afforded in the processing of waste products, and so would welcome a further communication from Sir Albert Howard on this aspect of his proposals.—We are, etc.,

REMINGTON WILSON.
London, S.W.3, July 3. JAMES GIBSON.

Insulin Syringes

SIR,—The human element will probably always prevent the complete elimination of errors in measurement of the dosage of insulin. To minimize the incidence of such errors, insulin syringes were produced with measurements in units marked on them, some for single-strength insulin and some for both single- and double-strength insulin. These special syringes tended to replace the ordinary 1-c.cm. syringe. However, with the advent of zinc-protamine-insulin and quadruple-strength insulin (80 units per c.cm.), and with the employment of zinc-protamine-insulin and ordinary insulin in the one syringe, both possibly being of different concentrations, there appears to be greater liability to error both among patients and nurses. I am writing this letter to suggest the advisability of returning to the 1-c.cm. syringe and discarding the various types of special insulin syringes marked in units. I think it would be preferable to have the 1-c.cm. syringe without any minims marked on the opposite side, as minims lead to further confusion. Dr. Lawrence informs me that he has for some time been using a special 1-c.cm. syringe with twenty marks clearly delineated on it, and that he gives the instructions as so many marks. If the experience of other physicians favours such a method of measuring insulin it would be very advantageous to accept this as a standardized method, assuming approval of the Nurses Council and the co-operation of syringe manufacturers. Anything that tends to simplicity and the minimizing of errors would, I think, be welcome and justified.—I am, etc.,

London, W.1, July 6. S. LEVY SIMPSON.

Insulin Syringe for Panel Patients

SIR,—The small glass syringe, costing from 1s. 6d. to 2s. 6d., usually supplied to panel patients for self-injection of insulin is very unsatisfactory. Its markings are too small for accurate dosage; it breaks easily, and its adequate sterilization takes a long time. At our diabetic clinic we supply a spirit-proof cylindrical case containing a suitably marked syringe to all our patients which keeps the syringe sterile and makes injection accurate, simple, and saves many minutes a day. This costs 6s. 6d., and our almoner raises the money in various ways. For some panel patients she has great and needless difficulties.

It is not generally known to doctors that such a syringe can be legitimately prescribed for panel patients under the existing regulations. Three Insurance Committees assure me that "the type of syringe is not indicated, and it is open to the insurance doctor to order the particular syringe which is, in his opinion, proper for the treatment of his patient." When our almoner asks for the doctor's signature to order such a syringe many are incredulous, and one even said that he would be liable to a £50 fine for

over-prescribing if he did so! And so our patients may be kept waiting for two months for what we consider a necessary syringe and an ultimate national economy—or try to buy it themselves when they realize the inefficiency of other types of syringe.

I hope the publication of this letter may help to remove delay in providing suitable syringes for insured diabetics everywhere. I promise to pay the imaginary fines of hitherto timid prescribers! So please sign up the diabetic for a good syringe.—I am, etc.,

The Diabetic Clinic, King's College Hospital, June 26. R. D. LAWRENCE.

Forgotten Intravaginal Pads

SIR,—A young married woman consulted me to-day because of a watery and extremely offensive vaginal discharge, which she said she had only noticed since the end of her last menstrual period, a week ago.

On questioning her I found that she was in the habit of using intravaginal pads, and she volunteered the information that she had been advised by a friend to douche for the discharge, and had done so this morning, completely forgetting that there was a pad *in situ*, and she had been quite unable to reach it since. On examination I found this pad lying high up in the vagina, and removed it with the help of volsellum forceps. Immediately afterwards there was a gush of dammed-up discharge, which had the most nauseating stench it has ever been my misfortune to smell.

The vaginal walls were extremely injected and puffy, and further examination revealed the presence of yet another pad, right up in the left lateral fornix. With considerable difficulty I managed to remove this second foreign body. It was dark grey in colour—almost black—and as it came out was followed by a gush of foul-smelling pus and blood. There was fairly extensive ulceration of the vaginal vault, where this intruder had been lying, and I should judge that it had been there since the last period but one. The patient was astounded, and said that she had not had the slightest idea that a second one had been left in, although the fact that she had failed to remember the first when she used the douche proves that they are easy things to forget.

In spite of the discharge, foetor, and ulceration, the woman assured me that she had felt not the slightest pain or discomfort, and I am uncomfortably impressed by the fact that these pads, if forgotten, are evidently capable of doing very considerable damage without attracting attention to themselves till long afterwards. In view of their rapidly increasing popularity (I am told that cheap stores now stock them) I feel that attention should be drawn to the more obvious dangers inherent in their use.—I am, etc.,

Wolverhampton, July 1. VICTOR RUSSELL, M.B., Ch.B.

Pelvic Disproportion

SIR,—I have followed the recent correspondence on pelvic disproportion with interest. I was brought up in the "trial of labour" school, and one of the objections given against induction was that if the induction should fail the position was very unsatisfactory. The mother, having been told that labour was being started early so that the baby should not become too large to be born naturally, will be very upset when labour does not actually begin. Should it become necessary to wait for labour to start naturally at term the chances of an unassisted delivery will be much diminished for psychological reasons. The risk of a Caesarean section will be much increased if the membranes have been ruptured for some days. Mr. L. Norman Reece (July 1, p. 41) relies on rupture of the membranes to induce labour. I should be very interested to learn whether he finds this method to be infallible, and whether he considers the risk of the induction failing to be negligible. Even after a stomach-tube induction I have known the onset of labour to be delayed for a few days. I do not know how rapidly the biparietal diameter increases, but it would be interesting to know what Mr. Reece finds is the average time elapsing between induction by rupture of membranes and the commencement of labour.—I am, etc.,

Hawkhurst, July 3. J. A. J. HAMMOND.

British Alternatives for Foreign Drugs

SIR,—For some time past we have been impressed by the widespread use of proprietary names for certain drugs, particularly in the prescribing of sedatives. The following quotation from the recently published *Textbook of Medical Treatment* by various authors (Livingstone, 1939) illustrates our contention:

"It is a wise plan to arrange for the patient to have a succession of good nights at the beginning of treatment, by giving a mild hypnotic-analgesic (e.g., *medinal* gr. v with aspirin gr. v, *luminal* gr. iss with aspirin gr. x, or one of the proprietary preparations such as Empyrin or Veganin)"—(p. 734, italics ours).

The fact that we are able to quote this example from a book in which great care is taken to give pharmacopoeial equivalents wherever possible indicates how well established the habit has become. We feel that in these anxious days this whole question assumes a new urgency in view of the fact that, whether we prefer these proprietary drugs or not, we may soon be deprived of any possibility of using many of them. In our opinion it would be a valuable service to the profession and to the nation if you, Sir, could give due prominence to the alternative British or pharmacopoeial names for foreign drugs.—We are, etc.,

T. FERGUSON RODGER,
SUSANNAH DAVIDSON,
JOHN D. SUTHERLAND

Glasgow, July 3.

Splints for Fractured Femur

SIR,—We must disagree from the opinions expressed by Mr. Tudor Hart (July 8, p. 87) as to the relative values of the Braun and Thomas splints in the treatment of fractures of the shaft of the femur. We have given both these methods a thorough trial, and one of us has had the opportunity of personal experience of the use of both these splints. We have found that maintaining the alignment of the fragments is a relatively easy matter while using the Thomas, but fraught with difficulty when a Braun splint is used; and there is no doubt that fixation of the fragments is much less secure with the latter than with the former. The Thomas enables a fixed extension to be put on temporarily while moving the patient for *x*-ray or for nursing purposes, whereas with the Braun splint every time the patient is moved the fragments are liable to get out of alignment; and the difficulties of management in these cases are enormously increased.

Further, as regards skeletal traction, one of us (J. C. N.) has already expressed his views on the relative value, as well as comfort, between a pin above the knee and a wire below it (*Journal*, August 27, 1938, p. 464). Our practice is to insert a Steinmann's pin, or even a wire, through the lower end of the shaft of the femur above the level at

which it begins to expand. This we have found less liable to move, but it must be introduced very carefully from the inner side, and is of great advantage in not causing any interference with the knee-joint if inserted in this way. Further, a pin gets a much better hold in the compact bone of the shaft than it does in the cancellous bone of the condyles, and also enables free movement of the knee-joint. We would like to add that the use of skeletal traction is definitely not a method to be recommended in the hands of those unskilled in the treatment of fractures.—We are, etc.,

D. DENHAM PINNOCK.
J. C. NICHOLSON.

London, W.1, July 8.

Relative Value of Hearing Aids

SIR,—Every medical practitioner is likely to be consulted by patients who complain of deafness, and he should be able to give advice as to the most suitable type of aid that the degree of disability calls for, and where this can be obtained. In the past the public have been exploited by certain firms, and we all know of patients who have been persuaded to part with considerable sums for aids that have proved useless.

I have been prompted to write by a feeling that comparatively few members of our profession are aware of the great assistance that is afforded to the deaf by the improvements effected in hearing aids during the last few years. I have suffered from a gradually increasing deafness of the otosclerotic type for the past fifteen years, and I had reached the stage when a game of bridge was trying for the other players, and when I had to sit next to the speaker at any medical meeting if I were to hear his address. Two years ago a friend brought me a valve aid that he had on trial, and asked me what I thought of it. Much to my delight I found that so far as most ordinary occasions were concerned I was no longer "deaf." Since that time I have had opportunities for testing a number of the leading types and makes of electrical aids. I am not proposing to give a technical description of these, and would refer those interested to an excellent paper by Mr. F. J. Cleminson in the *British Medical Journal* of May 21, 1938. I will merely describe in simple terms four stages of deafness, together with their most suitable remedy.

Stage I.—Ordinary conversation is heard without difficulty; at the theatre, or on occasions when hearing conditions are poor, it is evident that hearing is impaired. This stage is often encountered in elderly people who have little to occupy their time and thoughts, and become unduly worried. It is usually undesirable to encourage any aid for ordinary use, but a simple six-inch banjo trumpet will prove a help at theatres, etc.

Stage II.—Clear conversation is heard, but any quiet remarks have to be repeated. The patient is obviously deaf, but ordinary social and business relations are not seriously disturbed. Difficulty, however, is encountered at theatres, cinemas, and all meetings where speeches and addresses are given. For this stage I would recommend the simple electrical telephonic aid. This has been much improved during the past few years, and will probably give the degree of assistance required.

Stage III.—Ordinary conversation is not heard, and most social and business activities are therefore greatly handicapped. The sufferer is regarded as a nuisance by all but the more kindly disposed among his friends, and it is embarrassing to find that any casual remarks have to be given in a clear ringing voice that can be heard by everyone in the room. Public affairs and entertainments are completely ruled out. Patients in this group are helped in a remarkable manner by the modern valve aid that has been developed during the past few years, and it should be possible to overcome nearly all their disabilities by a suitably designed instrument.

Stage IV: the "Very Deaf."—If no power of hearing to either air or bone conduction is present, it is clear that no electrical aid will be of assistance. If, however, a patient can hear a voice spoken loudly into a trumpet, the more powerful types of valve aid may give help. The power and clarity of these aids are being improved every year, and I recently tested one new model that had twice the power of any aid I have encountered previously.

The most powerful type of valve aid can now be obtained in the divided form in which the power unit and batteries are carried in separate pockets. This obviates the difficulty of carrying a box, and is a real convenience. I usually carry nearly all the impedimenta in two hip pockets. A large earphone is necessary for distant hearing, but a small earpiece will probably suffice for ordinary occasions. For cases of middle-ear deafness with good bone conduction one firm produces a bone-conduction valve aid that is really efficient: this avoids an earpiece and is more comfortable to wear; further, there are a number of people with advanced otosclerosis who can be made to hear well by bone conduction, but whose power of hearing by air conduction is greatly impaired. A number of hospitals have a clinic attached to their aural department where patients can be tested with these aids, and several firms manufacture a model for people with reduced incomes which is quite effective.

I have already suggested that a medical practitioner should be able to advise his patient as to the type of aid indicated. He should further insist that under no circumstances should the patient buy the aid outright. Most reliable firms will allow a week's trial on payment of a small charge, and it is only by using an aid under normal conditions that its real value can be determined.—I am, etc.,

Ipswich, July 1. C. H. C. DALTON, M.A., M.D.

Bee-sting Anaphylaxis

SIR,—I have read the letter from "Apiarist" in the *Journal* of June 24 (p. 1306) with interest. Five years past I was called to see a man of 23 who had kept bees for many years and had been stung frequently. I saw him within ten minutes of being stung, and shall never forget the picture he presented. The features were unrecognizable, the lips and eyelids very swollen, the whole body the colour of a boiled lobster. He was semi-conscious and breathing with difficulty. His pulse was running and feeble and his general condition very serious. I injected adrenaline at once, and very soon his condition improved. Just three hours after being stung the man said he felt all right and all objective signs had disappeared. I concluded the condition was allergic, and advised him to give up keeping bees. Later he described his sensations, and they were very similar to those of "Apiarist."—I am, etc.,

Kendal, July 4. C. M. CRAIG.

Intestinal Toxaemia

SIR,—Drs. J. M. Vaizey and A. E. Clark-Kennedy (*Journal*, June 24, p. 1269) cast grave doubt on the widely accepted belief that dental sepsis causes rheumatism, indigestion, or anaemia. I agree, and ask them to consider the far more logical alternative that not only rheumatic and digestive but also dental and gingival disorders are due to one and the same cause—toxaemia of intestinal origin. Dr. J. T. Ingram (July 1, p. 5) in his article

invokes a "diathesis" to explain the constitutional signs that occur with seborrhoeic patients. There is no need for a "diathesis"; the signs he enumerates form an exact—if incomplete—list of the clinical manifestations of chronic intestinal stasis. I have tabulated them from his paper:

Gastro-intestinal: chronic constipation, malnutrition, flatulent dyspepsia, excess of mucus with hypotonia and masking of hydrochloric acid, secondary anaemia. Respiratory and nasopharyngeal: asthma, catarrh of the mucosa, rhinorrhoea and hay-fever from thickened turbinates, infected sinuses and antra, polypoid thickening of the mucosa. Dental: pyorrhoea, gingivitis, dental caries, and soft teeth. Skin: greasy, clammy, with non-pitting oedema, acne, and chilblains. Temperament: sullen indolence or "highly strung."

The diet that suits seborrhoeics and the diet-faults that go to perpetuate seborrhoea, as given by Dr. Ingram, are—very approximately—those that are good and bad respectively for stasis subjects—a testimony to his accuracy of observation.—I am, etc.,

London, W.1, July 4. ALFRED C. JORDAN, M.D.

Control of Functioning

SIR,—The apparent confirmation of F. M. Alexander's discovery of an integrating mechanism (primary control) in man's use of his psychophysical self by the work of Professor Coghill on the Amblystoma is something of the first importance, and should surely induce our physiologists and anatomists as well as neurologists and psychologists to correlate or to disprove the relationship of the one to the other. If they are related and corroborative then everything that is fundamental and vital is absent from our teaching methods and our systems of physical culture; in fact they are fundamentally wrong, no matter what apparently immediate marvellous results are obtained. It should be remembered that "all that glitters is not gold."

Alexander's discovery of the primary control did not require this latest biological proof, as the empirical and physiological proofs have been in existence for years; but since no one except Alexander has ever dreamt of a mechanism which controls the functioning of the entire psychophysical organism, with all its constituent organs (and which must control it if it is to function as an undivided totality), it is scarcely surprising that these proofs have been ignored. This mechanism of primary control is comparable in every respect to that which Coghill has discovered in the Amblystoma and described as the mechanism which maintains the integrity of "the total pattern of behaviour." If by "behaviour" is understood the "behaviour" of every cell in every structure and its accompanying function, it becomes apparent how vital it is to be able to direct and use the primary control by the mechanism Nature has provided and in the way that Nature intends. It is obvious on every hand that man's present direction of his primary control is resulting in a wrong use of his psychophysical self, interfering with his "total pattern of behaviour," the effects and symptoms of which may appear anywhere in the organism; such are the defects and disabilities and the many so-called diseases from which man is suffering now. These can only be removed by the redirection and conscious use of the primary control to restore the integrity of the "total pattern," and by no other means.

It would appear that until the profession realizes the necessity for and becomes interested in what is meant by "integration" and "primary control" it is useless to attempt to describe the mechanism by which it is exercised; but this much can be said: when certain muscles are cut experimentally or when the "total pattern of behaviour" becomes dominated by "partial patterns" all co-ordinated control is lost.—I am, etc.,

Bexhill-on-Sea, June 30. A. MURDOCH.

Anaesthesia in War Time

SIR,—Dr. Philip Ayre in the *Journal* of June 17 (p. 1255) drew attention to the value of cyclopropane anaesthesia in war time. I agree with his conclusions, and I should like to mention two other advantages of this type of anaesthesia. The first is that it is extremely economical in the amount of oxygen that is required. Already, owing to large Government orders, a shortage of the standard 20-foot oxygen cylinders has developed. In war time this shortage may become acute. When using cyclopropane in a closed circuit only one-eighth to one-sixth the amount of oxygen is required compared with the amount used with nitrous oxide in the usual semi-closed system. The other advantage that is shared with the semi-closed method is that the patient may be safely anaesthetized even in the presence of a lethal concentration of poison gas.

I agree with Dr. Ayre that the advocacy of intravenous drugs as the anaesthetics of choice for emergency surgery under war conditions is difficult to understand. Valuable as these drugs are in private and hospital practice when means of administering oxygen under pressure are immediately available, I feel that their widespread use under field conditions would soon bring them into disrepute.—I am, etc.,

Hove, Sussex, July 6. REX BINNING.

SIR,—"Second thoughts are best," and I am glad to note that in his last letter (*Journal*, July 8, p. 91) Dr. J. Blomfield admits that an auto-anaesthetic apparatus is of use, though not for war-time service. Dr. C. Langton Hewer (p. 91) points out that the problems confronting a war-time anaesthetist are precisely the same as in civil life. If war comes there would undoubtedly be a great lack of trained anaesthetists. During the last war, in none of the hospitals to which I was attached, both at home and abroad, was there a special anaesthetist, and the gap was filled by the physicians. With an almost certain lack of skilled anaesthetists in a possible war, a small portable auto-anaesthetic set, such as I described in your issue of May 27 (p. 1109), should be very valuable.—I am, etc.,

Guildford, July 8. T. B. JOBSON.

The Medical Directory, 1940

SIR,—To maintain the accuracy of our annual volume we rely upon the return of our schedule which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification.—We are, etc.,

J. & A. CHURCHILL, Ltd.

104, Gloucester Place, Portman Square, W.1, July 10.

The programme has now been issued for the fourth World Conference of Workers for Cripples, to be held at Bedford College, Regent's Park, London, July 16–22, under the presidency of Lord Nuffield. It has been organized jointly by the International Society for the Care of Crippled Children and the Central Council for the Care of Cripples. For the purposes of this conference a cripple is defined as "one lacking the normal use of the skeleton or skeletal muscles." The three official languages are English, French, and German. At the opening session an address will be given by the Minister of Health. The main subject for discussion on July 18 is "Preventive Orthopaedics in Childhood"; on July 20, "The Education, Vocational Training, and Subsequent Employment of the Crippled Child"; and on July 21, "The Industrial Cripple."

The Services

HEALTH OF THE R.A.F. IN 1937

The earlier stages of the present remarkable expansion of the Royal Air Force were already apparent in 1937, when the average strength, 59,232, was greater by nearly one-quarter than that of the previous year. The report records a slight decrease in the total number of cases of sickness and the number of sick daily, while the average duration of each case remained unchanged. There were 243 deaths during the year, showing an increase in incidence from 3.8 to 4.1 per thousand. Of these deaths 187 were the result of injury. The death rate from disease showed a marked decrease.

Injuries and Diseases

The number of cases of injury of all types during the year was 3,232. Casualties from flying accidents totalled 289, with 142 deaths. Sixteen injuries, none of them fatal, were caused by airscrews. The majority of these were sustained while actually handling the airscrews, but in one instance the hand of an airman was blown by the slipstream of one aircraft into the revolving airscrew of another machine immediately behind, and in another an airman was struck by the airscrew while crawling out from under the wing. One man was injured in a parachute descent. He landed on a motor car. As in previous years car and motor cycle accidents, the majority occurring off duty, accounted for a large number of injuries. One man was wounded in the thigh during air action in Palestine.

The incidence of influenza showed an almost fourfold increase during the year, mainly due to an epidemic of a mild type in England. There were fifty-one cases of dysentery abroad, of which thirty-eight were diagnosed as bacillary dysentery. The majority of cases occurred in India. Malaria showed a marked increase in incidence. Stations with the largest number of primary infections were Khartoum, Nairobi, Aboukir, and Abu-Sueir in the Middle East; Karachi and Miramshah in India; Hinaidi and Basrah in Iraq. The last-named country contributed largely to the rise in the incidence of phlebotomus fever with 283 cases. The damp and debris which are the inevitable concomitants of extensive building operations provided an ideal breeding ground for the phlebotomus at the new station of Habbaniya in the Baghdad district.

Hygiene in the R.A.F.

A miscellany of varied information is to be found in the section of the report devoted to hygiene. An improvement in the method of clothing is the issue of light-weight cotton pyjamas and underclothes in place of the woollen garments previously supplied. The new clothing, which has the additional advantage that it is more easily cleansed and disinfected, is much appreciated by airmen. With regard to dietary, the former allowance of one ounce of ordinary margarine has been replaced by an ounce of butter and half an ounce of vitaminized margarine. Aircraft apprentices and boys are also provided with an extra half-pint of milk every day. An interesting experiment was carried out at Peterborough concerning the vitamin C reserve of fifty airmen. Urinary ascorbic acid excretion was measured and the response to test doses observed. Twenty-two of the men showed a minor degree of deficiency, five a somewhat greater deficiency. At the same time a control group of five officers living in mess was investigated. Here the average daily excretion was almost double that of the airmen, and in each case there was a massive response to the first test dose. These officers were in the habit of taking a glass of orange juice at breakfast.

The report describes the preventive measures taken when seven aircraft, two from Cairo and five from Khartoum, carrying a total of thirty-five officers and men, made a cruise to West Africa. All the crews received a protective inoculation with serum and virus against yellow fever before starting. The inoculation gave little or no immediate reaction, but three to four months later seven men developed jaundice. Other precautions mentioned include pressure spraying of aircraft with pyrocide 20 twice daily and immediately before leaving any stopping place, enforced use of mosquito nets, and a daily dose of five grains of quinine. Despite the last two measures one officer and three airmen developed malignant tertian malaria (primary infection) within a fortnight of completion of the cruise.

Transfer of Casualties and Medical Assistance by Air

In the course of the year 298 patients were transported by air, and the errands of mercy performed by aircraft were varied indeed. Four nurses were flown from Calshot to Gibraltar to attend German sailors injured in the bombing of the *Deutschland*. In the Middle East Command calf lymph was delivered to a refugee camp in Kenya infected with small-pox, and anti-rabic vaccine was flown from Khartoum to Wau. The latter journey, although only 850 miles by air, normally involves several weeks' travelling by slow river steamer. In Transjordan a medical officer was flown to the scene of an accident to an Arab legion lorry, where he was able to render first aid and to bring back one of the injured men by air to Amman. On two occasions patients were transferred by air from British Somaliland to Aden. In one instance the case was one of acute appendicitis, successfully operated upon; in the other, two victims of an air crash were brought to hospital. Medical officers went by air to investigate an outbreak of fever ravaging the local tribes, to attend tribesmen injured in private wars, and to visit notables of Somaliland who were seriously ill.

Air transport proved to be of the greatest value in India, where 165 patients were transferred to hospital; 157 of these were sick and wounded in the Waziristan operations, who would otherwise have had to suffer a long and arduous road journey, or even to remain where they were, for at certain times either the military situation or the state of the roads rendered evacuation by means of ground transport impossible. Neil-Robertson stretchers and Universal stretcher sheets were not employed with aircraft engaged in this work, lying cases being loaded directly into the machines on ordinary stretchers.

The King has appointed Dr. F. M. R. Walshe to the Civil Consulting Staff of King Edward VII Convalescent Home for Officers at Osborne, Isle of Wight, in succession to Dr. Gordon Holmes, F.R.S.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

During June titles of the degrees of M.B., B.Chir. were conferred by diploma on G. M. Allen-Williams of Newnham College.

The managers of the Frank Edward Elmore Fund have elected Arthur Morgan Jones, M.Sc., M.B., Ch.B.Manch., and Richard Edward Kenny Levick, M.B., B.Chir., of Christ's College, to Elmore Medical Research Studentships, from October 1, 1939.

UNIVERSITY OF LEEDS

On July 3 the honorary degree of D.Sc. was conferred on Dr. Leonard Alfred Rowden, honorary director of the Electrotherapeutic and *X*-ray Departments of the General Infirmary at Leeds.

UNIVERSITY OF MANCHESTER

The following candidates have satisfied the examiners at the examinations indicated:

M.D.—*By thesis:* S. Almond, [1]C. G. Eastwood, Evelyn M. Holmes, A. E. Martin (gold medal), C. S. Parker, H. T. Simmons, C. Starkie.

FINAL M.B., CH.B.—*Part II:* G. T. Ashley, T. G. Barlow, Irene M. Bower, T. M. Brand, Frances M. Bullough, W. W. Burnett, T. E. A. Carr, G. R. Crawshaw, Olive I. Elkin, [3 5]Mary Fleure, R. T. Grime, Joan Halstead, C. Hamwee, C. P. Heywood, Hannah Horton, W. L. R. Kenyon, J. Latham, Joyce Leach, [2 4 6]A. D. Leigh, R. A. Martin, A. P. Massie, Asa Mills, [2 5]M. D. Milne, M. J. Parsonage, J. R. Platt, T. H. Redfern, E. Ridehalgh,

B. Roditi, E. S. Rogers, M. S. Rowley, L. D. Rutter, J. E. Schofield, Barbara M. Statham, F. W. Taylor, M. R. Tomlinson, G. K. Tutton, [3 5]A. F. Williams, R. M. Winston. *Part I (Forensic Medicine and Hygiene and Preventive Medicine):* A. Ashworth, J. H. R. Barker, F. R. Brebner-Smith, T. Brittain, G. Caplan, Rachel Claiman, Hilary J. Crewe, J. G. Ferguson, E. S. Frazer, R. J. Gampell, J. Gregory, Hilda R. Harris, H. Hassall, S. Haythornthwaite, Irene E. Howorth, Margaret Jacques, O. Janus, P. W. Kippax, J. T. A. Lloyd, J. L. Maclean, W. Mellor, Elsie L. Mettam, Catherine E. D. Nash, C. Parish, K. C. Prausnitz, T. F. Redman, F. Robinson, Margaret H. Roscoe, J. C. Seddon, G. K. Spruell, J. K. Steward, T. A. Taylor, Edith M. Thorp, A. L. Tulk, Ena M. Walmsley, Joyce Worthington.

D.P.H.—*Part II:* R. Bennett, Caroline J. Chalmers, W. Fielding, G. M. Fleming, D. MacL. MacKechnie, H. D. B. North, R. M. Shaw, G. R. Walker, A. B. White. *Part I:* S. G. Abelson, D. H. Anderson, H. S. Bagshaw, Caroline J. Chalmers, J. R. Davidson, W. Fielding, G. M. Fleming, N. Maclean, H. N. Osborne, M. Pivawer, R. M. Shaw, F. Stratton, A. B. White.

[1] With commendation. [2] First-class honours. [3] Second-class honours. [4] Distinction in medicine. [5] Distinction in surgery. [6] Distinction in obstetrics.

UNIVERSITY OF ABERDEEN

At a graduation ceremony on July 6 the honorary degree of LL.D. was conferred on Dr. Alexander Low, professor of anatomy in the University of Aberdeen from 1925 to 1938, and on Cyril Burt, D.Sc., professor of psychology in the University of London.

The following medical degrees and diplomas were conferred:

M.D.—[1]J. D. MacLennan, [2]A. B. Christie, [2]A. M. Ramsay, J. C. Niven (*in absentia*), R. W. H. Welsh.

M.B., CH.B.—[3 5]R. Semple, [4]Alison B. Cruickshank, [4]J. I. Rice, [4 5]R. L. Richards, [4 5]G. S. Riddell, J. Abernethy, L. H. Allan, Jessie E. C. Baird, J. E. A. Bartlet, K. M. Bell, C. A. Brown, P. L. Brunnen, W. N. Calder, I. W. Caldwell, W. D. Catto, G. Cormack, D. A. Craib, Phyllis E. Davidson, S. Duff, J. Duguid, Jean A. Ferguson, Marian M. Fergusson, Alice D. Findlay, H. R. Findlay, R. J. A. Fraser, Rose M. Fraser, L. D. M. Gavin, Helen W. Geddes, S. M. Gill, J. S. Hamilton, N. G. C. Hendry, J. A. Houston, A. Hunter, A. S. Jessamine, C. Low, D. McBain, A. D. McGill, J. K. Mackay, I. A. R. Mackenzie, Margaret R. McKenzie, M. MacLeod, Anne M. S. Macrae, N. H. Mackworth, R. G. Main, E. Milne, W. S. Milne, J. Morrison, C. F. Murison, Janet B. Patterson, I. D. Pennie, J. W. Rae, J. B. Raffan, Mary H. Reid, D. H. Rhind, J. Scorgie, E. T. Shennan, G. M. C. Smith, Helen A. Smith, D. L. Stewart, J. C. Taylor, Elizabeth M. F. Tolmie, Sheena M. Tosh, Jean C. Twort, P. B. R. Williams.

D.P.H.—[4]Ann L. Shennan (*née* Thomson), D. Barclay, C. E. Gorrod, J. J. T. Morrison, J. B. Petrie, G. L. Ritchie, C. J. Silver, J. M. Thomson.

[1] Awarded highest honours for thesis. [2] Awarded commendation for thesis. [3] With first-class honours. [4] With second-class honours. [5] Passed Final M.B., Ch.B. degree examination with distinction. [6] With credit.

NATIONAL UNIVERSITY OF IRELAND

UNIVERSITY COLLEGE, CORK

The following candidates have been approved at the examinations indicated:

M.D.—V. J. Dillon, W. Kearney, J. P. Morehan, P. F. O'Connor. *Exempt in Pathology:* M. M. Mansfield.

M.B., B.CH., B.A.O.—*M. F. McMahon, *D. J. O'Callaghan, †E. A. Scher, †F. H. Cross, †Madoline M. Horgan, †W. F. M. Fitzgerald, †M. J. Murphy, G. N. Dalton, Anna T. Gallagher, T. G. Galvin, D. M. Kelleher, T. Kelleher, Maev Kennedy, D. J. K. McCarthy, P. N. Murphy, St. J. G. O'Connell, T. J. O'Connor, J. F. O'Donovan, D. A. O'Sullivan, Beatrice G. Simmelkiar. *Part I:* T. F. Coleman, J. J. Hennessy, J. P. Kenefick, M. S. Murphy, P. J. Murphy, W. P. Navin, Mary L. Neville, J. S. O'Dwyer, M. G. O'Mahony, J. O'Regan, P. J. O'Sullivan. *Part II:* M. Bennett, J. A. Desmond, D. Herlihy, T. McCracken, J. A. A. Ryan. *Exempt in Medicine:* Nora T. U. O'Callaghan, W. P. O'Neill. *Exempt in Surgery:* P. J. Murphy, Mary L. Neville. *Exempt in Pathology:* M. Bennett. *Exempt in Ophthalmology:* P. J. Murphy.

* First-class honours. † Second-class honours.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Election to the Council

On July 6 three Fellows were elected into the Council to fill the vacancies caused by the retirement in rotation of Mr. G. E. Gask and Sir James Walton and by the death of Mr. Graham Simpson. The result of the poll was as follows:

	Votes
Sir JAMES WALTON (London)	585
CECIL AUGUSTUS JOLL (Royal Free)	518
ROBERT JOSEPH WILLAN (Newcastle-upon-Tyne) ..	448
Robert John McNeill Love (Royal Northern) ..	414
Reginald Martin Vick (St. Bartholomew's)	351
Robert Davies-Colley (Guy's)	342
Vincent Zachary Cope (St. Mary's)	275
Lennox Ross Broster (Charing Cross)	240
Ralph St. Leger Brockman (Sheffield)	198
Sir Lancelot Edward Barrington-Ward (Great Ormond Street)	195
James Ernest Helme Roberts (St. Bartholomew's) ..	191
John Bowman Hunter (King's College Hospital) ..	165
Julian Taylor (University College Hospital)	164
William Hugh Cowie Romanis (St. Thomas's) ..	156

In all 1,669 Fellows voted; in addition seventeen votes were found to be invalid and two votes arrived too late. Sir James Walton, Mr. Joll, and Mr. Willan are all elected for the full period of eight years.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on July 3, with Dr. John Henderson, President, in the chair, the following were admitted Fellows of Faculty: Habibud-Din Ahmed, M.B., William Ferguson Anderson, M.B., Ch.B., Tom Osborne Howie, M.B., Ch.B., Velu Pillai Kumara Pillai, M.B., B.S., Alfred Sands Rogen, M.B., Ch.B., Bhupendra Nath Sur, M.B., Abu Khaled Muhammad Abdul Wahed, M.B.

Obituary

Dr. CHARLES EVANS MAGUIRE died in London on June 13 after many years of active work in the British Colonial Medical Service and under the New Zealand Government. Born at Tain, Ross-shire, sixty-seven years ago, he received his medical education at Aberdeen and St. George's Hospital, graduating M.B., C.M. in 1893. For three years he was a medical officer in the Durham Mental Hospital. In 1898 he entered the Colonial Medical Service and was appointed assistant surgeon to a hospital in Lagos. He proceeded M.D. Aberdeen in 1899. He was later appointed Government medical officer at Ibadan in the Lagos hinterland. He trained at Netley for the Ashanti campaign, and subsequently served for six years in Northern and Southern Nigeria, being then transferred to Fiji, where he was successively medical officer in the Taviuni and Tewa River districts and was then placed in charge of the Suva Hospital. After five years in Fiji he was appointed chief medical officer at Tonga, and instituted a Government medical service in the Friendly Islands group; he was also British Vice-Consul at Tonga. In 1911 he became medical superintendent of the Auckland Hospital, New Zealand, and remained in the service of that hospital for more than twenty-five years. At the outbreak of the war he volunteered in New Zealand for active service, and was mentioned in dispatches for his work in organizing a hospital under canvas at Ismailia. He was later recalled by the New Zealand Government to organize the care of wounded New Zealanders on their return to their native land. He remained medical superintendent of Auckland Hospital until 1932, when failing eyesight necessitated his resignation, but, following a successful operation, he was appointed superintendent of Auckland Infirmary, from which he retired in the early part of 1938, returning to England in April of that year with his wife on an extended holiday, during which he became gravely ill, but still hoped to return to New Zealand next November. Elected a member of the British Medical Association in 1895, he served on the Representative Body at the Annual Meeting in 1925, and among those who attended his funeral in June was a representative of the Association. He is survived by his widow, a married daughter, and his sister.

Dr. HUGH ALEXANDER CLARKE of Deane Road, Liverpool, died there on June 24 after a long illness, at the age of 83. Born in County Antrim, he was first trained for the teaching profession, graduating M.A. at Queen's College, Belfast. After some years, during which he held various educational posts in England and Ireland, he entered University College, Liverpool, as one of its first

medical students in 1880, and graduated M.D., M.Ch., R.U.I. five years later. For two years he was resident medical officer to the old Brownlow Hill parish infirmary, after which he started private practice in the Kensington district of Liverpool, where he spent the remainder of his professional career, retiring from practice several years ago. He was physician to the Liverpool Chest Hospital from 1892 to 1925, and then was awarded consultant rank. He was also visiting physician to two of the Corporation infectious diseases hospitals. In June, 1937, he received the congratulations of the Liverpool Medical Institution on the attainment of his jubilee of membership. He had been a member of the British Medical Association for thirty-eight years. While in medical practice he took an active interest in educational work, and served on the old Liverpool School Board for the last five years before the City Council became the education authority of Liverpool in 1902. He also served as manager of two of the Council schools, being chairman of the board of managers of one for more than thirty years. He leaves his widow, two sons, both of whom are in the medical profession, and three daughters. His elder brother, Dr. Thomas Clarke, J.P., also survives him at the age of 93.

Dr. W. M. FELDMAN, F.R.C.P., senior physician to St. Mary's Hospital for Women and Children, Plaistow, E., died suddenly on July 2, aged 58. He received his medical education at the London Hospital and qualified with the English Conjoint Diplomas in 1904. He graduated M.B., B.S.Lond. in 1911, proceeding to the M.D. in 1920, took the M.R.C.P. diploma in 1926, and was elected a Fellow of the Royal College of Physicians of London in 1935. For eight years he was assistant physician and lecturer on child physiology at the Infants Hospital, Westminster, and in 1925 gave a Chadwick public lecture on ante-natal and post-natal child physiology and hygiene, having already published books on *Nursery Hygiene* and on the *Jewish Child: Its History, Folk Lore, Biology, and Sociology*. Dr. Feldman was a man of intellectual vigour, keenly interested in paediatrics and the scientific aspects of medicine. He was a Fellow of the Royal Astronomical Society and of the Royal Society of Edinburgh, and in 1923 published a treatise on *Biomathematics*, which reached a second edition four years ago. Beyond his work as physician to St. Mary's Hospital for Women and Children he was a member of the visiting staff of the Eastern Dispensary, medical examiner for the Whitechapel Foundation School, and lecturer and examiner on hygiene under the London County Council. His private practice was conducted from Harley Street and he lived in Finchley Road, having been a member of the Hendon Division of the British Medical Association since 1911.

We regret to announce the death on July 4, at the age of 63, of Dr. ROBERT MAURICE RANKING, until recently physician to the Tunbridge Wells General Hospital (now the Kent and Sussex Hospital). He was the elder son of the late John E. Ranking, M.D., F.R.C.P., of Tunbridge Wells, a leading consultant throughout the neighbouring parts of Kent and Sussex, who was killed in a road accident at Bexhill twenty-seven years ago. Robert Ranking began his medical studies at Pembroke College, Cambridge, graduating B.A. in 1898, and going on to St. Bartholomew's, the old hospital of his father and his uncle, Lieutenant-Colonel G. S. A. Ranking, I.M.S., the Persian and Arabic scholar. He qualified M.R.C.S., L.R.C.P. in 1902, and took the M.B., B.Ch. degrees at Cambridge in 1904 while house-physician to Sir Norman Moore at Bart's. In undergraduate days he was noted for great muscular strength, and at hospital he made his mark as a man of character and ability. After taking his medical degrees he joined the R.A.M.C., and reached the rank of major before returning to civil life to carry on his late father's practice. Within a year or two, however, he was back again in the R.A.M.C. under war conditions, and served for several years in France as surgical specialist to No. 14 General Hospital at Wimereux. He had proceeded to the M.D. at Cambridge in 1913, and soon after the war obtained the M.R.C.P. Dr. Ranking was an accomplished all-round clinician, with a high sense of duty and a determination to keep himself abreast of new knowledge and new methods.

Dr. MARCEL LABBÉ, whose death after a long and painful illness in Paris is announced, was professor of pathology and therapeutics and a member of the French Academy of Medicine. He was born in 1870 in France, and in 1920 he was appointed to the chair of general pathology at the Paris Faculty of Medicine. He was first attached to the Pitié and then to the Cochin Hospital. In collaboration with Professor Bezançon he published a standard work on haematology. Professor Labbé made many contributions to the study of chlorosis, purpura, haemophilia, and pernicious anaemia. More recently he was particularly interested in the problems of digestion and nutrition.

Medical Notes in Parliament

The Charitable Collections (Regulation) Bill and a motion on malnutrition and provision of cheap milk were set down for debate in the House of Lords this week. The business of the House of Commons included further stages of the Finance Bill and of the Milk Industry (No. 2) Bill. Amendments made by the House of Lords in the Civil Defence Bill were considered in the Commons.

In the House of Commons on July 5 the Experiments on Dogs Bill, "to prohibit experiments on dogs," was introduced by Mr. Groves and read a first time.

The Health and Housing Committee of Government supporters in the House of Commons arranged to meet on July 12 to discuss action for the reform of the Medicine Stamp Duties.

Sir Thomas Drummond Shiels has promised to address the Parliamentary Medical Committee on July 17 about measures for the treatment and prevention of venereal diseases, and on preparations to combat these diseases in a national emergency.

Milk Bill

Sir REGINALD DORMAN-SMITH in the House of Commons on July 7 moved the second reading of the Milk Industry (No. 2) Bill. He recalled that the original Milk Industry Bill had been withdrawn, and said it was not now possible to introduce this session fresh proposals which could be called comprehensive. Milk consumption had increased in this country, but the average was still less than half a pint a day, although the Advisory Committee on Nutrition recommended that an average consumption a head of one pint a day was the desirable level at which to aim. The scheme under the temporary Milk Acts to enable school children to obtain a daily ration of one-third of a pint at half price had been carried out with the co-operation of the local education and health authorities, and the number of children taking milk in schools had gone up to well over 3,000,000 in England and Wales, and that number was still increasing. The English Milk Board had introduced a scheme to encourage the production of clean milk, and at present over 40 per cent. of the total milk sales were at least of "accredited" standard. In Scotland the production of cleaner milk was likewise being encouraged. Under the Agricultural Act, 1937, efforts had been directed towards the eradication of tuberculosis in cattle.

The Bill before the House was meant by Exchequer contributions to encourage quality milk production, to enable the milk-in-schools scheme to be continued, and milk to be pro-

vided at reduced prices to welfare authorities in connexion with maternity and child welfare arrangements. Clause 1 of the Bill provided for Exchequer assistance in respect of quality milk production for two years from October 1, 1938, on the scale set out in the previous Milk Industry Bill. The rates of premium had been in operation since October 1, and the Milk Boards would be reimbursed for about £1,500,000 paid out since then. Clause 2 of the Bill provided for the milk-in-schools scheme up to the end of September, 1940, and for any cheap milk schemes which might be introduced for mothers and infants. As regards the latter the intention was to arrange for supply at reduced prices to local authorities so that they might undertake extensions of their existing schemes for the supply of milk either free or at reduced prices to nursing and expectant mothers and to children under 5. A scheme along those lines had been submitted by the Scottish Milk Marketing Board and had been approved, and he hoped it would soon be possible to launch a similar one for England.

In view of the increased consumption of milk in schools and the proposed maternity and child welfare schemes the Bill did not impose any limit to the annual Exchequer grants for these purposes, but it was expected that for the coming year they would be about £1,000,000 as compared with £800,000 this year and with £500,000 in earlier years. A new formula would be introduced to regulate the Exchequer grants to the Milk Marketing Boards for these schemes. One aspect of the Government's long-term policy was the Attested Herd Scheme. The Bill made the same provision for Exchequer contributions towards quality premiums in respect of milk from attested herds during the two years ended September 30, 1940, as was made in the former Milk Industry Bill, and the provision to be made after that date would be considered in long-term legislation for the milk industry. Apart from these quality premiums, owners of attested herds received a bonus in respect of disease eradication under the Agriculture Act, 1937, the operation of which extended to January 31, 1941. He had decided that payment made in respect of disease eradication should be considered independently of considerations affecting milk policy generally. The Government intended to introduce legislation at the first opportunity to extend up to September 30, 1948, the operation of the relevant section of the Agriculture Act. He did not think that payments made in respect of disease eradication by way of compensation for additional expenditure incurred in ridding a herd of tuberculosis and qualifying it for attestation should be of indefinite duration.

HIGH COST AND LOW CONSUMPTION

Mr. TOM WILLIAMS said the subsidy for quality milk and for cheap milk supplies for children and nursing or expectant mothers met with the general approval of Opposition members. Although Parliament was being asked to authorize a payment of £2,000,000 for producers of milk the Government had no knowledge of the condition of the buildings from which the milk came. Local authorities had full power to examine buildings and to apply the law, but had failed to use that power. Because these authorities had failed, and because the Gowland Hopkins Committee said 40 per cent. of the herds reacted to the tuberculin test, the Government had set up a national veterinary service. It had, however, only twenty-two veterinary surgeons for the whole country, although there were 25,000 premium producers and 125,000 producers who were not premium producers. In the last Bill Parliament was asked to confer power on local authorities for pasteurization; the majority of the medical profession were in favour of pasteurization, but the Government ran away from it because of the producer-retailers. The Opposition wished to see more school children take a larger quantity of milk, but the Milk Marketing Board had been so successful from the producers' point of view that in this country the price of milk was the highest of any country in Europe and the consumption was the lowest.

Dr. HADEN GUEST said the present milk consumption was below what it ought to be, especially among the poorer classes. He was not sure that this Bill would help materially to improve the position. Under the Milk (Extension and Amendment) Act, 1938, £250,000 was put aside for the supply to nursing mothers and to children under 5, and yet up to March 30, 1939, none of it had been spent. That was because the Minister had not come to an agreement with those concerned in the production and distribution of milk. The responsibility for that was the Minister's. It would be of great advantage if the average milk consumption by all children could be over one pint a day, by expectant mothers two pints a day, and by other adults on the average half a pint. If milk was 3½d. a pint the weekly consumption in the case of a family of a father, mother, and three children would be 14s. 2d. a week, an impossible expense for a working-class household. Many people in the lower income groups consumed little milk, and often only condensed or tinned milk imported from abroad while local milk was sent elsewhere. Under the present arrangement for the marketing and supply of milk 25 per cent. of the children were not getting sufficient for their growth. The Bill was at best a marking time Bill. By a reasonable policy with regard to milk and other foods it would be possible to wipe out a large proportion of the disease which at present existed in the population.

Colonel CLARKE said the policy of premiums on accredited milk was having valuable results and the average standard of cleanliness in the cowsheds of the country had been much improved. In many cases the conditions under which milk was produced compared favourably with the conditions in the premises of the small distributors in the towns. This was chiefly due to the accredited licences, while the improvement in the health of the herds was perhaps due more to the T.T. and attested licences. Mr. HOPKIN said the statement had been repeated that day that 40 per cent. of British herds had tuberculosis. The matter arose from the Gowland Hopkins Report. That committee examined 144 herds out of 140,000, and of 5,199 cattle examined 2,333 gave a positive reaction. The other evidence on which this disastrous statement had been founded was a report by the People's League of Health that of 55,318 cows slaughtered at various centres 39.5 per cent. were found post mortem to be infected. They did not know over how many years that was, and he submitted that the conclusion drawn by the Gowland Hopkins Committee on such slender premises was fantastic. That statement had done more harm to the milk industry than any other. In West Wales less than 2 per cent. of the cows tested were first reactors.

Mr. WEDDERBURN, replying for the Government, said that in Scotland last October, when premiums were offered for quality milk production, there were about 1,200 producers holding licences for standard and T.T. milk production whose sales during that month amounted to about 2,000,000 gallons. The number of producers holding such licences increased by April to 2,500, and their sales in that month to about 5,300,000 gallons, about half the total sales under the Scottish scheme. In England the number of accredited herds had gone up since February, 1938, from about 24,000 to 28,000 and the total number of gallons monthly from 30,000,000 to 48,000,000. The total production of accredited and T.T. milk was about 43 per cent. of the sales under the marketing scheme.

"DOUBTFUL EXPEDIENT" OF PASTEURIZATION

Mr. A. V. ALEXANDER said that the fact that the Government had dropped for the time being the pasteurization clauses of the Bill of 1938 was being overlooked. The corporation of Glasgow's proposals for pasteurization were dropped because it was stated that definite legislation was to be introduced. The same difficulty arose in legislation promoted by the Bournemouth Corporation. He asked when the Bill for pasteurization was to be introduced.

Mr. WEDDERBURN agreed that the Glasgow Corporation had been asked not to proceed last autumn with the provision concerning compulsory pasteurization, but now the Government Bill introduced last autumn had not been proceeded with there was no reason why any local authority which wished to secure compulsory pasteurization powers should not again introduce a private Bill. Compulsory pasteurization was still a controversial matter, and he could not agree

that the Government was under an obligation to introduce a national Bill for pasteurization. That did not mean that they had turned down the question.

The Bill was read a second time without a division. Discussion then arose on a financial resolution to authorize the expenditure consequent upon the Bill. On this resolution Dr. HAYDEN GUEST said that in exchange for this financial contribution there should be definite protection for the community against the possibility of infection. Parliament ought to have a guarantee that the milk which was to be subsidized was of a sufficiently high quality not to cause disease. The amount of tuberculous milk sold was a menace to the health of the community.

Sir R. DORMAN SMITH said the Ministry was getting on with the eradication of tuberculosis as much as it could, and surely it was better to try to do this by encouragement than by the doubtful expedient of general pasteurization. It was not everybody's opinion that pasteurization provisions were necessary or desirable. It was open for any local authority to present a Bill on pasteurization, and the Ministry of Health would deal with this as sympathetically as might be. Mr. ALEXANDER said that considering what was achieved by a sound system of pasteurization in a reduction of infant mortality he was surprised that the Ministry of Agriculture should plead in this matter the authority of the Minister of Health. Mr. J. J. DAVIDSON suggested that the Government should issue an official statement to local authorities who desired pasteurization so that they might understand the position.

Sir R. DORMAN SMITH said the Government had not seen fit to introduce pasteurization into the temporary legislation now before the House. The whole question of milk policy was under consideration with a view to legislation at a later date, and pasteurization might then be dealt with. He would not give any undertaking that it would be dealt with in 1940, nor would he say what the policy of pasteurization would actually be.

The House then agreed to the financial resolution.

Scottish Health Services Reviewed

In Committee of Supply in the House of Commons on July 4 the Estimates of the Department of Health for Scotland were considered. Colonel COLVILLE said that the civil defence work of the Department included the organization of the emergency hospital service and of medical, nursing, dental, and other personnel, the approval of first-aid posts and ambulance schemes made by local authorities, the evacuation scheme, and the provision of camps. This civil defence work meant heavy burdens on the central department and the local authorities and their staffs; they were being made easier to carry by the ready and enthusiastic co-operation of the voluntary hospitals, the medical, nursing, dental, and other professions, the various voluntary organizations, and the thousands of individuals throughout the country who were volunteering their services to prepare against the event of war.

The figures in the annual report of the Department showed that 1938 set up new records. The general death rate, the infant death rate, and the tuberculosis death rate were all the lowest on record. The infant death rates were still too high compared with some other countries, but in Edinburgh, Dundee, and Aberdeen they were now less than half what they were at the beginning of the century. School health records showed that, in height, weight, and general vitality, the children at different ages were better physically than their predecessors. In Glasgow the boys of 13 were 7½ lb. heavier and two inches taller than the boys examined in 1920; the girls were 9 lb. heavier and two inches taller. This all-round improvement did not justify complacency; it was an encouragement to continued effort. The initial difficulties of the Maternity Services Act, which was passed in 1937, were now being overcome, and the Act was being brought into operation in different parts of Scotland. Schemes under the Act were in operation in the areas of fourteen local authorities; another nine schemes had been approved and were to come into operation shortly; and the schemes of the thirty remaining local authorities were being considered and many of them were at an advanced stage. The Department looked to these schemes to reinforce efforts to reduce maternal mortality and to improve generally the services for mothers and children. The maternal mortality rate was 4.9 in 1938; that was not quite so good as the 4.8 in 1937, but it was the second lowest in their records.

POPULATION TRENDS

They were looking to the Population (Statistics) Act to provide them with material necessary for study of the vital problem of population trends. This problem affected all their social planning, and it was essential to have more exact knowledge than they had at present. In the meantime, for the first time in their history the population of Scotland had reached the five million mark, according to the provisional estimate of the Registrar-General. Size of population was not everything, but the quality of the population, its age grouping, and so on, certainly were important. For instance, it was the increasing numbers of old people that at least partly explained the increased incidence of cancer. He hoped shortly to issue a preliminary circular to local authorities on the Cancer Act, the full operation of which would depend, among other things, on exact knowledge of the existing facilities in Scotland, what developments were desirable, and where. An expert advisory committee was at present addressing itself to these matters, and he hoped to have its report before the end of October.

With regard to the Highlands and Islands Medical Service, the increase of £10,000, which brought the total under this head to £106,000—two and a half times the original provision—was wanted mainly for assistance towards the cost of a new general hospital at Lerwick, Zetland, and additions to the general hospital at Stornoway, in Lewis. These two hospitals were essential links in the chain of medical services—doctors, nurses, hospitals, specialists, and so on—that now admirably served the Highlands and Islands of Scotland. The air ambulance service between the Western Isles and the Renfrew Airport continued to prove a boon in urgent cases. During 1938 over thirty patients were transported by air to hospital at Glasgow under the grant-assisted schemes of the county councils of Argyll and Inverness. Progress was being made with the hospital services of Scotland generally. There were still deficiencies, but schemes for repairing them were under way in several areas. These included a large new general and maternity hospital and a new fever hospital in Lanarkshire and schemes for co-operation among local authorities in other parts of Scotland for new and extended hospital services.

The number of persons (apart from juvenile contributors) coming within the scope of the national health insurance scheme increased in 1938 by nearly 200,000, and the expenditure on cash benefits per head declined from 4.89 pence in 1937 to 4.40 pence in 1938. The decline in expenditure on cash benefits reflected a lower sickness rate; the average cost was the lowest since 1934. But influenza had been busy during the opening months of 1939, and sickness expenditure increased accordingly.

A new scheme for milk at reduced prices to nursing and expectant mothers and children under 5 years had been started. The intention of the scheme was that one pint of milk a day free, or at a price not exceeding 2d. a pint, should be supplied. He had brought this scheme to the notice of local authorities and its reception had been favourable.

HOSPITAL SERVICES IN WAR: WHITE PAPER PROMISED

Replying to the debate Mr. WEDDERBURN said that properly co-ordinated plans existed for the organization of a casualty hospital service in Scotland in the event of war. The Minister of Health and the Secretary of State for Scotland proposed, at a very early date, to lay before Parliament a White Paper which would give a comprehensive statement of the arrangements made in Scotland as well as in England. The Secretary of State for Scotland would also, at the beginning of next week, issue to all hospitals in Scotland which would play an integral part in the emergency hospital service a statement showing the particular part they would be

expected to play. The statement would also give the approximate numbers of beds which they would be expected to set free for casualties, the ways in which it was contemplated that these beds would be freed, the probable number of patients to be sent home, and the number to be transferred to the institutions to which patients would be transferred from the hospitals.

With regard to the Highland Medical Services, the Secretary of State had never felt justified in asking for the annual sum proposed in the report on the health services for last year, but increases had been obtained for a fairly large number of small objects, and the amount of grant payable this year showed an increase of £10,000 on the corresponding figures for last year. With regard to dental services, the Department's medical officer was at present engaged on a survey of the school dental conditions throughout the whole of Scotland with a view to making recommendations for the improvement of these services.

Collections for Hospitals

The Charitable Collections (Regulation) Bill was considered in committee by the House of Lords on July 4. Lord MACMILLAN moved an amendment providing that where a police authority refused to grant a licence or revoked a licence which had been granted the applicant or holder of the licence might appeal to the Home Secretary, and if he allowed the appeal the police should forthwith issue the licence. Lord Macmillan said that in the case of most of the large hospitals their collecting area was not confined to one police district. It seemed ridiculous that a hospital, such as the Hospital for Sick Children in Great Ormond Street, which was supported by people in every part of England and many in Scotland, should have to obtain the authority of the police in every particular area where a collection was made. If this hospital, which was to all intents and purposes a national charity, and many other hospitals had to get the necessary licences all over the country it would hamper their work very much. Perhaps never before had the hospitals had so many anxieties as at present, and never had they been more entitled to rely on the good will of those interested in their work.

After debate the amendment was withdrawn.

Lord LUKE moved an amendment to Clause 3 (Exemptions in the case of collections over wide areas) providing that the Home Secretary might exempt from the necessity for obtaining a police licence a person desirous of promoting collections for a voluntary hospital approved by the British Hospitals Association or by King Edward's Hospital Fund. He said that the reason why the hospitals were not included in the favoured list of charities associated with the Bill was because they did not beg nationally. It was admitted that they served the community very well locally, and in some instances did so throughout the country, but on the whole their service departments were usually better than their appeal sections, and the latter did not often reach from Land's End to John o' Groats. In the past they had obtained support from an area, say, of fifty or even one hundred miles around their hospitals, from which district they received the bulk of their patients, though in these days of motor accidents they might have patients from any part of the country. Their area might include half a dozen or even a dozen police divisions, and in each of those the favoured outside authorities would start with an advantage over the local hospital by having exemption.

The amendment, Lord Luke continued, would not put the local hospitals at the head of the favoured list of charities; it would only put them on a level, and that after they had been thoroughly approved by one of the two central hospital bodies he had mentioned. There had been a good deal of mystery about the list of favoured charities. The mover of the second reading of the Bill said that exemption was to be given to a list of charities which had had a conference before deciding to support the Bill, but he only gave the names of some of them. No doubt these were the best of the names, but there might be a dozen or more on the list. They had not seen it. Probably some of these were very efficient beggars, and had the right to be termed "national beggars," but he disputed any suggestion that they did more national service than many of the hospitals. The money available in the hands of those who gave to charity was certainly not inexhaustible, and there was competition for it. The most worthy causes were not always the ones most efficiently begged for. The hospital which only appealed to, say, a dozen police areas and gave full service to those areas might have a very active secretary for its hospital work, but he might be too busy a man to compete successfully with national beggars who invaded his territory, and he simply could not afford to be further handicapped against the efficient appeals which he had referred to.

The Earl of COURTOWN said that the proposal in the amendment would give undue advantage to a voluntary and non-elected association. The application of a local hospital which did not belong to that association for a licence to make a collection might be regarded with some doubt by the police. The joint committee had fully considered the matter and had decided that it was not necessary to include voluntary hospitals. Viscount BRIDPORT said that the Government could not agree with the amendment. The trouble involved in applying to several police authorities in cases where a hospital covered a wide area would not be great.

The amendment was negatived and the committee stage was concluded.

Deputy Medical Inspector to Mines Department

Replying to Mr. Gordon Macdonald on July 4 Mr. GEOFFREY LLOYD said the Royal Commission on Safety in Mines had expressed the view that health and safety duties should always be regarded as a primary function of the Mines Department, and that the status of the Health and Safety Division should be raised. The Government proposed to give effect to this view by substantially strengthening the administrative staff and by raising the status of the head of the Division to that of a deputy under-secretary—a matter to which the Royal Commission attached the highest importance. In addition a number of new technical posts had been created at headquarters, including a deputy medical inspector and an additional inspector to deal with problems of the prevention and suppression of dangerous dusts. More stringent regulations for dealing with the dangers of coal dust would probably come into force on October 1. In accordance with the Royal Commission's recommendations, measures for suppressing and collecting coal dust in mechanized mining were being considered by a Departmental Committee, and a detailed revision of the Electricity Regulations was in progress. A scheme for the reorganization and expansion of the Mines Inspectorate on the lines recommended by the Commission had been approved.

Compensation for Weil's Disease

On July 4 Sir ARNOLD WILSON asked the Home Secretary if he was aware that Weil's disease had been scheduled as an industrial disease in Queensland under the Workmen's Compensation Acts (Amendment) Act of 1936, and if he would consider similar action in Britain under the same definition. Mr. PEAKE agreed that the infection had been made the subject of compensation under Queensland law. In regard to this country the Home Secretary's inquiries were not quite complete, but he contemplated making an order shortly.

Construction of Camps.—Dr. Elliot states that between thirty and forty camps are likely to be constructed in England and Wales by the National Camps Corporation, for use as school camps in peace and as evacuation camps in war. So far thirty sites have been found, construction of four camps has been started, and it is hoped to begin seven more in the next fortnight. The first camp will be complete by the end of August. In all cases the local authorities are being consulted. All the buildings are of Canadian cedar with cedar shingle roofs.

Medical News

Former pupils of Robert Gordon's College, Aberdeen, are to entertain the President of the British Medical Association, Dr. Thomas Fraser, to lunch in the Palace Hotel, Aberdeen, on Friday, July 28, at 1 p.m. Gordonians should, if they have not already done so, communicate with the secretary of the Former Pupils' Association, Mr. James Pyper, LL.B., 5, Union Terrace, Aberdeen, as soon as possible, to allow arrangements to be completed.

The annual prize-giving ceremony of the Middlesex Hospital Medical School will be held at the Queen's Hall, Langham Place, W.1, on Thursday, July 20, at 3 p.m., with Mr. S. A. Courtauld, chairman of the School Council, in the chair. The address will be delivered by Professor W. B. Tuck, D.Sc., on "The Chemical Elements." The dean, Dr. H. E. A. Boldero, will present the report for the past year, and the prizes and medals gained by students and nurses will be distributed by Sir Edward Mellanby. After the ceremony visitors will be welcomed at the hospital and medical school.

Mrs. Walter Elliot, wife of the Minister of Health, will open the new treatment block at the country branch of the Royal National Orthopaedic Hospital at Stanmore, Middlesex, on Wednesday next, July 19, at 3.15 p.m. A feature of the new building is the fine swimming pool for the treatment of patients with paralytic conditions and certain diseases of joints.

In connexion with the emergency blood transfusion service an official information bureau has been opened in London at Central 8691 and 8695 to handle the growing volume of telephone inquiries from volunteers. The new bureau is being worked by volunteer telephonists.

The Chairman of the London County Council has approved the appointment by Mr. Hervey Watt, coroner for the eastern district of London, of Mr. A. P. L. Cogswell, M.B., B.S., as deputy coroner, and Mr. J. M. Robertson, M.B., B.S., as assistant deputy; and by Mr. Ingleby Oddie, coroner for the central district, of Mr. Cogswell as assistant deputy coroner.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

During the week there was a moderate increase in the notifications of diphtheria in England and Wales, 882 against 783, the figures in London being 100 against 89. The figures, however, remain well below those for the corresponding week last year and the median values for the last nine years. Notifications of scarlet fever were 1,751, against 1,597, and in London 166, against 162. The figures for the whole country are in excess of those for last year and for those of the last nine years, but the London notifications remain well below the corresponding figures.

Of the 30 cases of enteric fever notified in the last four weeks in England and Wales, 4 belong to the Rhondda Valley outbreak of paratyphoid fever, in which 25 cases have been notified in the last four weeks. The County Kerry outbreak of typhoid appears to be subsiding; 1 fresh case was notified at Dingle during the week, compared with 5 in the previous week; altogether there have been 102 cases with 3 deaths. The source of infection is believed to have been milk.

During the week 5 cases of typhus fever were notified in Drogheda urban district, Co. Louth, of which 2 patients have died; both are males, one 70 years of age and the other somewhat younger. Two families are affected, and 7 or 8 persons known to have been in contact with persons suffering from typhus have been removed to the isolation hospital for observation. It is believed that the infection was introduced to the community by one of the patients, a young man who works at the docks, where cases occur at rare intervals.

Quarterly Returns for England and Wales

According to the *Quarterly Return* of the Registrar-General for England and Wales for the quarter ended March 31, 153,547 live births were registered in England and Wales, 1,640 less than were registered in the corresponding quarter of 1938, representing an annual rate of 15.1 per 1,000 of the estimated mid-year population for 1938. Of the total number, 7,354 were illegitimate, 937 more than in the first quarter of 1938. Of the 153,547 live births, 78,694 were males and 74,853 females, giving a proportion of 1,051 males to 1,000 females, compared with the average male proportion in the ten preceding first quarters of 1,052. There were 154,158 deaths registered (excluding stillbirths), 34,957 more than in the preceding quarter, corresponding to an annual rate of 15.2 per 1,000 of the population, or 1.6 above that recorded during the first quarter of 1938. The infant mortality rate was equal to 65 per 1,000 registered live births, or 17 per 1,000 below the average of the ten preceding first quarters. The highest death rates from diarrhoea and enteritis among children under 2 years of age were 22.2 in Sunderland, 19.2 in Birmingham, 17.1 in Bradford, 14.3 in Kingston-upon-Hull, and 13.3 in Southampton.

Typhus Fever in North Africa, 1939

During the four-week period ended June 17 typhus fever in Egypt fell from 875 to 677 in the whole of the country, from 234 to 155 in the Gharbiya province, from 187 to 177 in the Daqahliya, and from 149 to 90 in the Minufiya province (Lower Egypt). During the same period the number of cases in Tunisia fell from 1,075 to 979 in the whole of the country, from 336 to 227 in the civil district of Susa, from 103 to 89 in the civil district of Gafsa, and from 61 to 53 in the civil district of Zagwan. The number of cases rose, on the other hand, from 209 to 257 in the civil district of Sfax, and from 50 to 67 in the civil district of Tozeur. In Algeria in the three weeks ended June 17, cases recorded fell from 274 to 271, while in Morocco cases recorded in the months of March, April, and May were 203, 198, and 149 respectively.

Principal Infectious Diseases in New York, 1938

During the year there were notified in New York 700 (1,184) cases of diphtheria, 34,604 (12,091) cases of measles, 8,419 (10,058) cases of scarlet fever, and 12,232 (4,653) cases of whooping-cough. It is seen that, while there was a marked reduction in the incidence of scarlet fever and diphtheria, epidemics of measles and whooping-cough were encountered simultaneously instead of in alternate years, as in London. The death rate from diphtheria and scarlet fever per 100,000 persons under 15 years was 1.6 (3.6) and 1.1 (1.9) respectively, and for measles and whooping-cough per 100,000 persons under 5 years, 9.3 (6.1) and 23.3 (10.6) respectively; the figures in parentheses apply to 1937. Other rates were typhoid fever 0.3, cerebrospinal fever 0.7, influenza 2.2, and pneumonia 63.2. The infant mortality rate (deaths under 1 year of age per 1,000 live births) was 38.3, the death rate of persons under 5 years per 1,000 estimated population at that age was 1,087, and the general death rate per 100,000 population was 984.

General Mortality in 1937-8

Details are given in the *Weekly Epidemiological Record* of the Health Section of the League of Nations of the general mortality (annual rate per 1,000 population) for the majority of countries for 1938. High rates were recorded in Chile 24.6, the Straits Settlements 21.3, Unfederated Malay States 21.1, Malta 20.3, Rumania 19.2, Federated Malay States 19.1; and low rates in the United States 10.7, Norway 10.0, New Zealand 9.7, Australia 9.6, and Netherlands 8.5. During the years 1937–8 rates of between 10 and 12 were recorded in Denmark, Sweden, Norway, Iceland, Germany, Switzerland, Canada, the United States, and among the white population of the Union of South Africa. Compared with 1937, the general death rate was slightly increased in France, Luxembourg, Austria, Hungary, Czecho-Slovakia, Malta, Australia, New Zealand, and in four countries of South America. A slight regression was observed in most of the other countries.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 1, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)					1930-8 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	26	3	12	1	1	18	2	10	1	1		
Deaths		1	—				—	—				
Diphtheria	882	100	163	22	18	943	140	176	44	21	903	145
Deaths	16	2	4	1	—	22	2	5	1	1		
Dysentery	57	20	23		—	47	11	27		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	6	1	—		—	4	—	—	1	—		
Deaths		—					1					
Enteric (typhoid and paratyphoid) fever	30	2	6	11	4	26	5	3	5	—	29	
Deaths	1	—	—	—	—	—	—	—	1	—		
Erysipelas		29	50	2	1			57	2	5		
Deaths		1					—					
Infective enteritis or diarrhoea under 2 years												
Deaths	21	6	9	5	1	39	9	15	1	3		
Measles		31	77		8			113		6		
Deaths	5	—	—	2	—	8	3	3	1	—		
Ophthalmia neonatorum	90	9	34		1	105	10	49		—		
Deaths												
Pneumonia, influenzal*	449	41	—	1	12	622	45	12	7	22	605	45
Deaths (from influenza)	9	3	3	2	—	17	3	—	2	—		
Pneumonia, primary			137	21				178	9			
Deaths		6		4	6		16		6	13		
Polio-encephalitis, acute	2	—				1	—					
Deaths		—					—					
Poliomyelitis, acute	3	—	—	1	—	3	—	8	1	—		
Deaths		—					—					
Puerperal fever	3	3	18		—	4	4	23	2	1		
Deaths							2					
Puerperal pyrexia	159	15	29		—	184	30	17		2		
Deaths		—†										
Relapsing fever	—	—			—	—	—			—		
Deaths												
Scarlet fever	1,751	166	231	60	74	1,641	152	361	88	78	1,630	210
Deaths	2	—	2	—	—	2	1	1	—	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	5	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough		285	105		12			97		13		
Deaths	16	1	3	—	2	13	3	3	—	1		
Deaths (0-1 year)	249	32	54	29	12	279	51	59	30	14		
Infant mortality rate (per 1,000 live births)	39	28				46	42					
Deaths (excluding stillbirths)	3,988	676	485	151	113	3,926	739	521	167	150		
Annual death rate (per 1,000 persons living)	9.8	8.7	9.8	10.2	9.9	9.6	9.4	10.6	11.3	13.3		
Live births	6,458	1,050	919	369	194	6,884	1,313	979	338	260		
Annual rate per 1,000 persons living	15.9	13.5	18.6	24.8	17.0	16.9	16.7	19.9	22.9	23.0		
Stillbirths	237	28	37			300	46					
Rate per 1,000 total births (including stillborn)	36	22	39			42	34					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Deaths from puerperal sepsis.

Letters, Notes, and Answers

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QUERIES AND ANSWERS

Special Stethoscope

"M." writes from Ireland: I shall be grateful to any member who has had experience in the use of a stethoscope, aided by electricity or otherwise, intended for a physician whose hearing is somewhat impaired for auscultation if he will give me advice on the subject of choosing one.

Excessive Smoking

"H. M. S. T." (in reply to "R. R.," July 1, p. 50) writes: Although the connexion between smoking and duodenal ulcer is generally accepted, it is as well to ascertain whether the excessive cigarette smoking frequently met with in these patients is not, to a great extent, an indication of the nervous temperament which constitutes one of the outstanding features of the "duodenal diathesis." In my experience this is often the case, and for many years I have based my treatment on the recognition of an underlying or associated neurosis. In fact I am beginning to doubt whether smoking *per se* really deserves the importance, as a causative factor, generally accorded to it. Admittedly there are cases in which a vicious circle may be set up. Assuming that the diagnosis of duodenal ulcer is correct—and it is by no means always so, even when the symptoms appear to be conclusive—I would suggest the use of sedatives such as potassium bromide or luminal. A combination I often use is pulv. bismuthi co., ʒj, pot. brom., gr. x–xx, tinct. bellad., ♏ v–xv, aq. ad ʒj, every four hours before each alternate feed. It is important to watch the patient's tolerance of belladonna. Every possible effort should also be made to discover and eliminate worries and anxieties of all kinds—domestic, business, mental, and physical. Three or four cigarettes a day, smoked in a long cigarette-holder provided with an ample cotton-wool filter, which should be changed with each cigarette, do no possible harm if taken after a feed preceded by the above mixture.

"T. H. W." writes: From personal experience I beg to state that the craving for a smoke after meals has been entirely cured by washing out the mouth carefully after meals and, when this has been completed, swallowing a mouthful of cold water. The only drawback to this plan seems to be that the craving to cleanse the mouth becomes almost as troublesome as the craving for a smoke, and not so easy to satisfy at times.

Income Tax

Expenses of Car, etc.

"G. W." inquires whether there is any recognized mileage allowance for car expenses, or any generally accepted ratio between total expenses (or costs of drugs and instruments) and total turnover.

*** The majority of practitioners keep a record of garage accounts, occasional purchases, etc., in order to claim the correct deduction, and the Revenue authorities are presumably concerned to see that in other cases any estimates do not err on the generous side. "G. W." is unlikely to obtain a higher rate than 4d. a mile. We cannot suggest any recognized ratio between gross earnings and expenses. The circumstances of practices differ so widely that such a rule-of-thumb method of calculating income-tax liability is not applicable.

LETTERS, NOTES, ETC.

Oestradiol for Rheumatoid Arthritis

Dr. J. T. WOODHEAD (Acomb, York) writes: I have to report an interesting phenomenon which demands some clinical research. Having had some success in a woman with rheumatoid arthritis, using oestradiol (progynon B oleosum forte), I decided to try it on a man suffering from the same complaint. The results were dramatic. From the second injection pain was reduced and swelling and stiffness disappeared rapidly. I then took the worst case of rheumatoid arthritis in my practice: a man who could hardly walk about but who managed to drag himself to work daily with great difficulty. He could not put on his coat alone owing to the stiffness of his shoulders. He was given 25,000 international benzoate units of progynon B oleosum twice weekly for two weeks and 10,000 units twice weekly for a further two weeks. At the end of the first week he could put on his coat alone and he was already beginning to walk better. Of course there is a danger of causing enlargement of the prostate gland which must be watched, and it might be advisable to give testosterone at the end of the treatment.

Medical Literature for China

Dr. MARY GILCHRIST writes: The China Medical Aid Committee has recently received an appeal from Dr. Lim of the Chinese Red Cross Training School, at Kweiyang, for medical journals and medical and surgical textbooks for the training school. This training school, in the words of its own report, "is attempting, in the fire of war, to build a firm base for the National Health Service of the new China." The training school co-operates with the Chinese Red Cross, the Army Medical Service Corps, and the National Health Administration. Many of your readers who do not file back issues of their medical journals would doubtless be willing for them to be used in such a cause. May I therefore take this opportunity of appealing through your columns to the profession, both for medical journals (numbers for the past two years would be most welcome) and for medical textbooks suitable for the training of young doctors, nurses, dressers, and ambulance units. Surgical and first-aid textbooks are most urgently required, but any good recent (within the last five or ten years) textbooks would be most gratefully accepted. Journals and books should be sent to Dr. Joan McMichael, organizing secretary, China Medical Aid Committee, 121, Westbourne Terrace, London, W.2. Journals may be sent monthly, or collected and sent for several months together. All books and journals will be forwarded direct to China, and the British Fund for the Relief of Distress in China, to which we are affiliated, is able to secure free carriage for us.

Sleep Charts: Addendum

Dr. Rudolf's article on sleep charts, which appeared in last week's issue at page 76, was printed without references. As these may be of service to those interested in the subject they are here appended.

REFERENCES

Laird, D. A. (1931). *Amer. Med.*, **37**, 271.
Stoeckmann, T. (1933). *Münch. med. Wschr.*, **80**, 618.
—— (1934). Ibid., **81**, 1353.

Amputations: Corrigendum

An error crept into the last line but four of the last paragraph of the section headed "The Syme Amputation" in Mr. Max Page's article on "Amputations under War Conditions" in the *Journal* of July 8, 1939, p. 78. It should have read "an inch above the ankle" and not "an inch below the ankle."